

69°, 291° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.																										
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.																										
0	19 15.7 +24.7	98.5	19 06.6 +25.7	98.9	18 57.2 +26.6	99.2	18 47.4 +27.6	99.6	18 37.3 +28.6	99.9	18 26.8 +29.6	100.2	18 16.0 +30.5	100.5	18 04.8 +31.5	100.9	0	19 40.4 +24.3	97.6	19 32.3 +25.4	97.9	19 23.8 +26.4	98.3	19 15.0 +27.4	98.6	19 05.9 +28.3	99.0	18 56.4 +29.2	99.3	18 46.5 +30.2	99.6	18 36.3 +31.2	100.0	1																	
1	20 04.7 +24.1	96.6	19 57.7 +25.0	97.0	19 50.2 +26.1	97.3	19 42.4 +27.0	97.7	19 34.2 +28.0	98.0	19 25.6 +29.0	98.4	19 16.7 +30.0	98.7	19 07.5 +30.9	99.1	2	20 28.8 +23.7	95.6	20 22.7 +24.8	96.0	20 16.3 +25.7	96.4	20 09.4 +26.8	96.7	19 54.6 +28.8	97.4	19 46.7 +29.7	97.8	19 38.4 +30.6	98.2	3	20 52.5 +23.4	94.6	20 47.5 +24.4	95.0	20 42.0 +25.4	95.4	20 36.2 +26.4	95.8	20 30.0 +27.4	96.1	20 23.4 +28.4	96.5	20 16.4 +29.4	96.9	20 09.0 +30.3	97.2	4		
5	21 15.9 +23.0	93.6	21 11.9 +24.0	94.0	21 07.4 +25.1	94.4	21 02.6 +26.1	94.8	20 57.4 +27.1	95.2	20 51.8 +28.1	95.6	20 45.8 +29.0	95.9	20 39.3 +30.1	96.3	5	21 38.9 +22.7	92.7	21 35.9 +23.8	93.1	21 32.5 +24.8	93.4	21 28.7 +25.8	93.8	21 24.5 +26.8	94.2	21 19.9 +27.8	94.6	21 14.8 +28.8	95.0	21 09.4 +29.8	95.4	6	22 01.6 +22.3	91.7	21 59.7 +23.3	92.1	21 57.3 +24.4	92.5	21 54.5 +25.4	92.9	21 51.3 +26.4	93.3	21 47.7 +27.4	93.7	21 43.6 +28.5	94.1	21 39.2 +29.4	94.5	7
8	22 23.9 +22.0	90.7	22 23.0 +23.0	91.1	22 21.7 +24.0	91.5	22 19.9 +25.1	91.9	22 17.7 +26.1	92.3	22 15.1 +27.1	92.7	22 12.1 +28.1	93.1	22 08.6 +29.1	93.5	8	22 45.9 +21.5	89.6	22 46.0 +22.6	90.1	22 45.7 +23.7	90.5	22 45.0 +24.7	90.9	22 43.8 +25.8	91.3	22 42.2 +26.8	91.7	22 40.2 +27.8	92.2	22 37.7 +28.8	92.6	9																	
10	23 07.4 +21.2	88.6	23 08.6 +22.3	89.1	23 09.4 +23.3	89.5	23 09.7 +24.3	89.9	23 09.6 +25.3	90.3	23 09.0 +26.4	90.8	23 08.0 +27.4	91.2	23 06.5 +28.4	91.6	10	23 28.6 +20.8	87.6	23 30.9 +21.8	88.0	23 32.7 +22.9	88.5	23 34.0 +24.0	89.4	23 34.9 +25.0	89.4	23 35.4 +26.0	89.8	23 35.4 +27.0	90.2	23 34.9 +28.1	90.7	11																	
12	23 49.4 +20.3	86.6	23 52.7 +21.4	87.0	23 55.6 +22.5	87.5	23 58.0 +23.6	87.9	23 59.9 +24.6	88.4	24 01.4 +25.7	88.8	24 02.4 +26.7	89.3	24 03.0 +27.7	89.7	12	24 09.7 +20.0	85.6	24 14.1 +21.1	86.0	24 18.1 +22.1	86.5	24 21.6 +23.1	86.9	24 24.5 +24.3	87.4	24 27.1 +25.2	87.8	24 29.1 +26.3	88.3	24 30.7 +27.3	88.7	13																	
14	24 29.7 +19.5	84.5	24 35.2 +20.6	85.0	24 40.2 +21.7	85.4	24 44.7 +22.8	85.9	24 48.8 +23.8	86.4	24 52.3 +24.9	86.8	24 55.4 +25.9	87.3	24 58.0 +27.0	87.7	14	24 49.2 +19.1	83.5	24 55.8 +20.1	83.9	25 01.9 +21.2	84.4	25 07.5 +22.3	84.9	25 12.6 +23.4	85.3	25 17.2 +24.4	85.8	25 21.3 +25.5	86.3	25 25.0 +26.5	86.8	15																	
16	25 08.3 +18.6	82.4	25 15.9 +19.8	82.9	25 23.1 +20.8	83.4	25 29.8 +21.9	83.8	25 36.0 +22.9	84.3	25 41.6 +24.1	84.8	25 46.8 +25.1	85.3	25 51.5 +26.2	85.8	16	25 26.9 +18.2	81.4	25 35.7 +19.3	81.9	25 43.9 +20.4	82.3	25 58.9 +22.6	83.3	26 05.7 +23.6	83.8	26 11.9 +24.7	84.3	26 17.7 +25.7	84.8	17																			
19	26 02.9 +17.2	79.3	26 13.8 +18.3	79.8	26 24.2 +19.5	80.2	26 34.1 +20.6	80.7	26 43.5 +21.7	81.2	26 52.4 +22.7	81.7	27 00.8 +23.8	82.2	27 08.7 +24.8	82.7	19	26 31.1 +17.2	77.1	26 39.4 +18.3	77.6	26 47.7 +19.3	78.1	26 55.1 +20.3	78.6	27 03.8 +21.3	79.1	27 11.9 +22.3	79.6	27 18.8 +23.4	79.6	22																			
20	26 20.1 +16.8	78.2	26 32.1 +17.9	78.7	26 43.7 +18.9	79.2	26 54.7 +20.0	79.7	27 05.2 +21.1	80.2	27 15.1 +22.3	80.7	27 24.6 +23.3	81.2	27 33.5 +24.4	81.7	20	26 36.9 +16.3	77.1	26 50.0 +17.4	77.6	27 26.3 +18.5	78.1	27 37.4 +20.7	79.1	27 47.9 +22.8	80.2	27 57.9 +23.9	80.7	21																					
22	26 53.2 +15.8	76.1	27 07.4 +16.9	76.5	27 21.1 +18.0	77.0	27 34.3 +19.1	77.6	27 47.0 +20.2	78.1	27 59.1 +21.3	78.6	28 10.7 +22.4	79.1	28 21.8 +23.4	79.6	22	27 09.0 +15.3	75.0	27 24.3 +16.4	75.5	27 39.1 +17.5	76.0	27 53.4 +18.6	76.5	28 07.2 +19.7	77.0	28 33.1 +21.9	78.1	28 45.2 +23.0	78.6	23																			
24	27 24.3 +14.8	73.9	27 40.7 +15.9	74.4	27 56.6 +17.0	74.9	28 12.0 +18.1	75.4	28 26.9 +19.1	75.9	28 41.2 +20.3	76.5	28 55.0 +21.3	77.0	29 08.2 +22.4	77.5	24	27 39.1 +14.3	72.8	27 56.6 +15.4	73.3	28 13.6 +16.5	73.8	28 30.1 +17.6	74.3	28 46.0 +18.7	74.8	29 01.5 +19.7	75.4	29 16.3 +20.9	75.9	29 30.6 +22.0	76.5	25																	
26	27 53.4 +13.8	71.7	28 12.0 +14.9	72.2	28 30.1 +15.9	72.7	28 47.7 +17.0	73.2	29 04.7 +18.2	73.8	29 21.2 +19.3	74.3	29 37.2 +20.3	74.8	29 52.6 +21.4	75.4	26	28 07.2 +13.2	70.6	28 26.9 +14.3	71.1	28 46.0 +15.5	71.6	29 04.5 +17.6	72.2	29 40.5 +18.7	72.7	29 57.5 +19.8	73.8	30 14.0 +20.9	74.3	27																			
28	28 20.4 +12.7	69.5	28 41.2 +13.8	70.0	29 01.5 +14.8	70.5	29 21.2 +16.0	71.0	29 40.5 +17.0	71.6	29 59.2 +18.1	72.1	30 17.3 +19.2	72.7	30 34.9 +20.3	73.2	28	28 33.1 +12.1	68.4	28 55.0 +13.2	68.9	29 16.3 +14.3	69.4	29 37.2 +15.4	69.9	29 57.5 +16.5	70.5	30 13.3 +17.6	71.0	30 36.5 +18.7	71.6	30 55.2 +19.8	72.1	29																	
30	28 45.2 +11.6	67.3	29 08.2 +12.7	67.8	29 30.6 +13.8	68.3	29 52.6 +14.8	68.8	30 14.0 +15.9	69.4	30 34.9 +17.0	69.9	30 55.2 +18.1	70.5	31 15.0 +19.2	71.0	30	28 56.8 +11.1	66.1	29 20.9 +12.1	66.6	29 44.4 +13.2	67.2	30 07.4 +14.3	67.7	30 29.9 +15.4	68.2	30 51.9 +16.5	68.8	31 13.3 +17.6	69.4	31 34.2 +18.7	69.9	31																	
32	29 07.9 +10.4	65.0	29 33.0 +11.5	65.5	29 57.6 +12.6	66.0	30 21.7 +13.7	66.6	30 45.3 +14.8	67.1	31 30.8 +15.4	67.7	31 30.9 +16.9	68.2	31 52.9 +18.0	68.8	32	29 18.3 +9.9	63.9	29 44.5 +11.0	64.4	30 10.2 +12.0	64.9	30 35.4 +13.1	65.4	31 00.1 +14.2	66.0	31 24.2 +15.3	66.5	31 47.8 +16.4	67.1	32 10.9 +17.4	67.7	33																	
34	29 28.2 +9.4	62.7	29 55.5 +10.4	63.3	30 22.2 +11.5	63.8	30 48.5 +12.5	64.3	30 22.2 +13.5	64.3	31 14.3 +13.5	64.9	31 39.5 +14.6	65.4	32 04.2 +15.7	66.0	32	29 16.3 +3.6	61.6	30 05.9 +9.7	62.1	30 33.7 +10.8	62.6	31 01.0 +11.9	63.2	31 27.8 +13.0	63.7	31 54.1 +14.1	64.3	32 19.9 +15.2	64.8	32 45.2 +16.2	65.4	35																	
36	29 37.6 +8.7	61.6	30 05.9 +9.7	62.1	30 33.7 +10.8	62.6	31 12.9 +11.3	62.0	31 40.8 +12.4	62.6	32 08.2 +13.4	63.1	32 35.1 +14.4	63.7	33 01.4 +15.6	64.3	36	29 54.5 +7.5	59.3	30 24.8 +8.6	59.8	30 54.7 +9.7	60.3	31 24.2 +10.7	61.2	32 21.4 +12.8	62.0	32 49.5 +13.9	62.5	33 17.0 +14.9	63.1	37																			
38	30 02.0 +7.0	58.2	30 33.4 +8.0	58.7	31 04.4 +9.0	59.2	31 34.9 +10.0	59.7	32 04.9 +11.1	60.3	32 34.4 +12.1	60.8	33 03.4 +13.2	61.4	33 36.5 +14.3	62.0	34 0.0 +6.3	57.0	30 41.4 +7.4	57.5	31 12.5 +14.2	58.0	32 4.4 +15.2	58.5	33 03.4 +13.2	60.3	33 46.2 +13.6	60.8	39																						
40	30 15.3 +5.8	55.9	30 48.8 +6.7	56.4	31 21.8 +7.7	56.9	31 54.3 +8.8	57.4	32 26.4 +9.8	57.9	32 58.0 +10.9	58.5	33 29.2 +11.9	59.0	33 59.8 +12.9	59.6	40	30 44.8 -1.0	43.1	31 28.5 -0.2	43.5	32 09.1 +0.7	44.0	32 54.8 +1.5	44.4	33 37.5 +2.4	44.9	34 19.9 +3.2	45.4	35 01.9 +4.1	45.8	35 43.5 +5.0	46.4	51																	
41	30 21.1 +5.2	54.7	30 55.5 +6.2	55.2	31 29.5 +7.2	55.7	32 03.1 +8.2	56.2	32 36.2 +9.2	56.8	33 08.9 +10.2	57.3	33 41.1 +11.2	57.9	34 12.7 +12.3	58.4	41	30 26.3 +4.5	53.6	31 01.7 +5.5	54.1	32 11.3 +6.4	54.6	32 21.4 +8.5	55.6	33 19.1 +5.6	56.1	33 52.3 +10.5	56.7	34 25.0 +11.6	57.2	42																			
42	30 30.8 +3.9	52.4	31 07.2 +4.9	52.9	31 43.2 +5.8	53.4	32 18.7 +6.9	53.9	32 53.9 +7.8	54.4	33 28.6 +8.8	54.9	34 02.8 +9.9	55.5	34 36.6 +10.8	56.1	43	30 34.7 +3.3	51.3	31 12.1 +4.2	51.7	31 49.0 +5.2	52.2	32 01.7 +7.2	52.7	33 37.4 +8.2	53.8	34 12.7 +9.1	54.3</td																						

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 69°, 291°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z																						
0	19 15.7	-25.0	98.5	19 06.6	-26.0	98.9	18 57.2	-27.0	99.2	18 47.4	-27.9	99.6	18 37.3	-28.9	99.9	18 26.8	-29.8	100.2	18 16.0	-30.8	100.5	18 04.8	-31.6	100.9	0
1	18 50.7	-25.3	99.5	18 40.6	-26.2	99.8	18 30.2	-27.2	100.2	18 19.5	-28.2	100.5	18 08.4	-29.2	100.8	17 57.0	-30.1	101.1	17 45.2	-31.0	101.4	17 33.2	-32.0	101.8	1
2	18 25.4	-25.5	100.4	18 14.4	-26.6	100.8	18 03.0	-27.5	101.1	17 51.3	-28.5	101.4	17 39.2	-29.3	101.7	17 26.9	-30.3	102.0	17 14.2	-31.2	102.3	17 01.2	-32.1	102.6	2
3	17 59.9	-25.9	101.4	17 47.8	-26.8	101.7	17 35.5	-27.8	102.0	17 22.8	-28.7	102.3	17 09.9	-29.7	102.6	16 56.6	-30.6	102.9	16 43.0	-31.5	103.2	16 29.1	-32.4	103.5	3
4	17 34.0	-26.1	102.3	17 21.0	-27.0	102.7	17 07.7	-28.0	103.0	16 54.1	-28.9	103.3	16 40.2	-29.9	103.6	16 26.0	-30.8	103.8	16 11.5	-31.7	104.1	15 56.7	-32.6	104.4	4
5	17 07.9	-26.4	103.3	16 54.0	-27.4	103.6	16 39.7	-28.3	103.9	16 25.2	-29.2	104.2	16 10.3	-30.1	104.5	15 55.2	-31.0	104.7	15 39.8	-31.9	105.0	15 24.1	-32.7	105.3	5
6	16 41.5	-26.6	104.2	16 26.6	-27.5	104.5	16 11.4	-28.4	104.8	15 56.0	-29.4	105.1	15 40.2	-30.3	105.4	15 24.2	-32.1	105.6	15 07.9	-32.1	105.9	14 51.4	-33.0	106.1	6
7	16 14.9	-26.9	105.2	15 59.1	-27.8	105.4	15 43.0	-28.8	105.7	15 26.6	-29.7	106.0	15 09.9	-30.5	106.2	14 53.0	-31.4	106.5	14 35.8	-32.3	106.8	14 18.4	-33.2	107.0	7
8	15 48.0	-27.1	106.1	15 31.3	-28.1	106.4	15 14.2	-28.9	106.6	14 56.9	-29.8	106.9	14 39.4	-30.8	107.1	14 21.6	-31.7	107.4	14 03.5	-32.5	107.6	13 45.2	-33.3	107.9	8
9	15 20.9	-27.3	107.0	15 03.2	-28.2	107.3	14 45.3	-29.2	107.5	14 27.1	-30.1	107.8	14 08.6	-30.9	108.0	13 49.9	-31.8	108.3	13 31.0	-32.6	108.5	13 11.9	-33.5	108.7	9
10	14 53.6	-27.6	107.9	14 35.0	-28.5	108.2	14 16.1	-29.3	108.4	13 57.0	-30.2	108.7	13 37.7	-31.1	108.9	13 18.1	-31.9	109.1	12 58.4	-32.9	109.4	12 38.4	-33.7	109.6	10
11	14 26.0	-27.7	108.9	14 06.5	-28.6	109.1	13 46.8	-29.6	109.3	13 26.8	-30.4	109.6	13 06.6	-31.3	109.8	12 46.2	-32.2	110.0	12 25.5	-33.0	110.2	12 04.7	-33.8	110.4	11
12	13 58.3	-28.0	109.8	13 37.9	-28.9	110.0	13 17.2	-29.7	110.2	12 56.4	-30.7	110.5	12 35.3	-31.5	110.7	12 14.0	-32.3	110.9	11 52.5	-33.1	111.1	11 30.9	-34.0	111.3	12
13	13 30.3	-28.2	110.7	13 09.0	-29.1	110.9	12 47.5	-29.9	111.1	12 25.7	-30.7	111.3	12 03.8	-31.6	111.5	11 41.7	-32.5	111.7	11 19.4	-33.3	111.9	10 56.9	-34.1	112.1	13
14	13 02.1	-28.3	111.6	12 39.9	-29.2	111.8	12 17.6	-30.1	112.0	11 55.0	-31.0	112.2	11 32.2	-31.8	112.4	11 09.2	-32.6	112.6	10 46.1	-33.4	112.8	10 22.8	-34.2	112.9	14
15	12 33.8	-28.6	112.5	12 10.7	-29.4	112.7	11 47.5	-30.3	112.9	11 24.0	-31.1	113.1	11 00.4	-31.9	113.3	10 36.6	-32.7	113.4	10 12.7	-33.6	113.6	9 48.6	-34.4	113.8	15
16	12 05.2	-28.7	113.4	11 41.3	-29.6	113.6	11 17.2	-30.4	113.8	10 52.9	-31.2	114.0	10 28.5	-32.1	114.1	10 03.9	-33.9	114.3	9 39.1	-34.7	114.5	9 14.2	-34.5	114.6	16
17	11 36.5	-28.9	114.3	11 11.7	-29.7	114.5	10 46.8	-30.6	114.7	10 21.7	-31.4	114.8	9 56.4	-32.2	115.0	9 31.0	-33.0	115.1	9 05.4	-33.8	115.3	8 39.7	-34.5	115.4	17
18	11 07.6	-29.0	115.2	10 42.0	-29.8	115.4	10 16.2	-30.7	115.5	9 50.3	-31.5	115.7	9 24.2	-32.3	115.8	8 58.0	-33.1	116.0	8 31.6	-33.9	116.1	8 05.2	-34.7	116.3	18
19	10 38.6	-29.2	116.1	10 12.2	-30.1	116.2	9 45.5	-30.8	116.4	9 18.8	-31.6	116.6	8 51.9	-32.4	116.7	8 24.9	-33.2	116.8	7 57.7	-34.0	117.0	7 30.5	-34.8	117.1	19
20	10 09.4	-29.3	117.0	9 42.1	-30.1	117.1	9 14.7	-30.9	117.3	8 47.2	-31.8	117.4	8 19.5	-32.6	117.5	7 51.7	-33.4	117.7	7 23.7	-34.1	117.8	6 55.7	-34.9	117.9	20
21	9 40.1	-29.5	117.9	9 12.0	-30.3	118.0	8 43.8	-31.1	118.1	8 15.4	-31.9	118.3	7 46.9	-32.6	118.4	7 18.3	-33.4	118.5	6 49.6	-34.1	118.6	6 20.8	-34.9	118.7	21
22	9 10.6	-29.6	118.7	8 41.7	-30.4	118.9	8 12.7	-31.2	119.0	7 43.5	-31.9	119.1	7 14.3	-32.8	119.2	6 44.9	-33.5	119.4	6 15.5	-34.3	119.4	5 45.9	-35.0	119.5	22
23	8 41.0	-29.7	119.6	8 11.3	-30.5	119.7	7 41.5	-31.3	119.9	7 11.6	-32.1	120.0	6 41.5	-32.8	120.1	6 11.4	-33.6	120.2	5 41.2	-34.3	120.3	5 10.9	-35.0	120.4	23
24	8 11.3	-29.8	120.5	7 40.8	-30.6	120.6	7 10.2	-31.4	120.7	6 39.5	-32.1	120.8	6 08.7	-32.9	120.9	5 37.8	-33.6	121.0	5 06.9	-34.4	121.1	4 35.9	-35.2	121.2	24
25	7 41.5	-29.9	121.4	7 10.2	-30.7	121.5	6 38.8	-31.4	121.6	6 07.4	-32.3	121.7	5 35.8	-33.0	121.8	5 04.2	-33.7	121.9	4 32.5	-34.5	122.0	4 00.7	-35.1	122.0	25
26	7 11.6	-30.1	122.2	6 39.5	-30.8	122.4	6 07.4	-31.6	122.4	5 35.1	-32.3	122.5	5 02.8	-33.0	122.6	4 30.5	-33.8	122.7	3 58.0	-34.5	122.8	3 25.6	-35.2	122.8	26
27	6 41.5	-30.1	123.1	6 08.7	-30.9	123.2	5 35.8	-31.6	123.3	5 02.8	-32.3	123.4	4 29.8	-33.1	123.4	3 56.7	-33.8	123.5	3 23.5	-34.5	123.6	2 50.4	-35.3	123.6	27
28	6 11.4	-30.2	124.0	5 37.8	-30.9	124.1	5 04.2	-31.7	124.2	4 30.5	-32.5	124.2	3 56.7	-33.2	124.3	2 22.9	-33.9	124.3	2 49.0	-34.0	125.2	1 39.8	-35.2	125.2	28
29	5 41.2	-30.3	124.9	5 06.9	-31.0	124.9	4 32.5	-31.8	125.0	3 58.0	-32.0	125.1	2 09.1	+33.0	125.1	0 37.3	-33.3	129.3	0 04.0	+34.0	128.5	0 06.1	+35.3	52.3	32
30	5 10.9	-30.3	125.7	4 35.9	-31.1	125.8	4 00.7	-31.8	125.9	3 25.6	-32.6	125.9	2 50.4	-33.3	126.0	1 15.1	-33.9	126.0	1 39.8	-34.6	126.0	1 04.6	-35.4	126.0	30
31	4 40.6	-30.5	126.6	4 04.8	-31.2	126.7	3 28.9	-31.8	126.7	2 53.0	-32.5	126.8	2 17.1	-33.2	126.8	1 41.2	-34.0	126.8	1 05.2	-34.6	126.8	0 29.2	-35.3	126.8	31
32	4 10.1	-30.4	127.5	3 33.6	-31.2	127.5	2 57.1	-31.9	127.6	2 20.5	-32.6	127.6	1 43.9	-33.3	127.6	1 07.2	-33.9	127.6	0 30.6	+3.4	127.6	0 06.1	+35.3	52.3	32
33	3 39.7	-30.6	128.3	3 02.4	-31.2	128.4	2 25.2	-31.9	128.4	1 47.9	-32.6	128.4	1 10.6	-33.3	128.5	1 07.2	-33.9	127.6	0 30.6	+3.4	127.6	0 06.1	+35.3	52.3	33
34	3 09.1	-30.5	129.2	2 31.2	-31.3	129.2	1 53.3	-32.0	129.2	0 42.7	-32.7	130.1	0 04.0	-33.3	130.1	0 00.7	+34.0	50.7	0 38.7	+34.6	50.7	1 16.7	+35.3	50.7	34
35	2 38.6	-30.6	130.0	1 59.9	-31.2	130.1	1 21.3	-32.0	130.1	0 42.7	-32.7	130.1	0 29.3	+33.3	49.1	0 04.0	+34.7	50.7	1 34.7	+35.2	49.9	1 52.0	+35.2	49.9	35
36	2 08.0	-30.7	130.9	1 28.7	-31.4	130.9	0 49.3	-31.9	130.9	0 10.0	-32.6	130.9	0 29.8	+33.3	49.1	1 08.6	+34.0	49.1	1 47.9	+34.6	49.1	2 27.2	+35.2	49.1	36
37	1 37.3	-30.7	131.8	0 57.3	-31.3	131.8	0 17.4	-32.0	131.8	0 22															

70°, 290° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Dec.																		
0	18 21.0	+24.6	98.1	18 12.4	+25.6	98.4	18 03.5	+26.5	98.7	17 54.2	+27.5	99.1	17 44.6	+28.4	99.4	17 34.6	+29.4	99.7	17 24.3	+30.4	100.0	17 13.8	+31.3	100.3	0
1	18 45.6	+24.2	97.1	18 38.0	+25.2	97.5	18 30.0	+26.2	97.8	18 21.7	+27.2	98.1	18 13.0	+28.2	98.5	18 04.0	+29.2	98.8	17 54.7	+30.1	99.1	17 45.1	+31.0	99.4	1
2	19 09.8	+24.0	96.2	19 03.2	+25.0	96.5	18 56.2	+26.0	96.9	18 48.9	+27.0	97.2	18 41.2	+28.0	97.5	18 33.2	+28.9	97.9	18 24.8	+29.9	98.2	18 16.1	+30.8	98.5	2
3	19 33.8	+23.6	95.2	19 28.2	+24.6	95.5	19 22.2	+25.7	95.9	19 15.9	+26.6	96.2	19 09.2	+27.6	96.6	19 02.1	+28.6	96.9	18 54.7	+29.5	97.3	18 46.9	+30.5	97.6	3
4	19 57.4	+23.4	94.2	19 52.8	+24.4	94.6	19 47.9	+25.3	94.9	19 42.5	+26.4	95.3	19 36.8	+27.3	95.7	19 30.7	+28.3	96.0	19 24.2	+29.3	96.4	19 17.4	+30.3	96.7	4
5	20 20.8	+22.9	93.2	20 17.2	+24.0	93.6	20 13.2	+25.0	94.0	20 08.9	+26.0	94.3	20 04.1	+27.1	94.7	19 59.0	+28.1	95.1	19 53.5	+29.0	95.4	19 47.7	+29.9	95.8	5
6	20 43.7	+22.7	92.2	20 41.2	+23.7	92.6	20 38.2	+24.8	93.0	20 34.9	+25.7	93.4	20 31.2	+26.7	93.8	20 27.1	+27.7	94.1	20 22.5	+28.8	94.5	20 17.6	+29.7	94.9	6
7	21 06.4	+22.3	91.3	21 04.9	+23.3	91.6	21 03.0	+24.3	92.0	21 00.6	+25.4	92.4	21 25.9	+26.4	92.8	20 54.8	+27.4	93.2	20 51.3	+28.4	93.6	20 47.3	+29.4	93.9	7
8	21 28.7	+21.9	90.3	21 28.2	+23.0	90.7	21 27.3	+24.0	91.0	21 26.0	+25.1	91.4	21 24.3	+26.1	91.8	21 22.2	+27.1	92.2	21 19.7	+28.0	92.6	21 16.7	+29.1	93.0	8
9	21 50.6	+21.6	89.3	21 51.2	+22.6	89.7	21 51.3	+23.7	90.1	21 51.1	+24.7	90.5	21 50.4	+25.7	90.9	21 49.3	+26.7	91.3	21 47.7	+27.8	91.7	21 45.8	+28.7	92.1	9
10	22 12.2	+21.2	88.3	22 13.8	+22.3	88.7	22 15.0	+23.3	89.1	22 15.8	+24.3	89.5	22 16.1	+25.4	89.9	22 16.0	+26.4	90.3	22 15.5	+27.4	90.7	22 14.5	+28.4	91.1	10
11	22 33.4	+20.8	87.2	22 36.1	+21.9	87.7	22 38.3	+23.0	88.1	22 40.1	+24.0	88.5	22 41.5	+25.0	88.9	22 42.4	+26.1	89.3	22 42.9	+27.1	89.7	22 42.9	+28.1	90.2	11
12	22 54.2	+20.5	86.2	22 58.0	+21.5	86.6	23 01.3	+22.5	87.1	23 04.1	+23.6	87.5	23 06.5	+24.7	87.9	23 08.5	+25.6	88.3	23 10.0	+26.7	88.8	23 11.0	+27.8	89.2	12
13	23 14.7	+20.0	85.2	23 19.5	+21.1	85.6	23 23.8	+22.2	86.1	23 27.7	+23.2	86.5	23 31.2	+24.2	86.9	23 34.1	+25.4	87.4	23 36.7	+26.3	87.8	23 38.8	+27.3	88.2	13
14	23 34.7	+19.6	84.2	23 40.6	+20.7	84.6	23 46.0	+21.7	85.0	23 50.9	+22.9	85.5	23 55.4	+23.9	85.9	23 59.5	+24.9	86.4	24 03.0	+26.0	86.8	24 06.1	+27.0	87.3	14
15	23 54.3	+19.3	83.1	24 01.3	+20.3	83.6	24 07.7	+21.4	84.0	24 13.8	+22.4	84.5	24 19.3	+23.5	84.9	24 24.4	+24.5	85.4	24 29.0	+25.6	85.8	24 33.1	+26.6	86.3	15
16	24 13.6	+18.7	82.1	24 21.6	+19.8	82.6	24 29.1	+20.9	83.0	24 36.2	+22.0	83.5	24 42.8	+23.1	83.9	24 48.9	+24.1	84.4	24 54.6	+25.1	84.8	24 59.7	+26.2	85.3	16
17	24 32.3	+18.4	81.1	24 41.4	+19.5	81.5	24 50.0	+20.6	82.0	24 58.2	+21.6	82.4	25 05.9	+22.6	82.9	25 13.0	+23.7	83.4	25 19.7	+24.8	83.8	25 25.9	+25.8	84.3	17
18	24 50.7	+17.9	80.0	25 00.9	+19.0	80.5	25 10.6	+20.0	80.9	25 19.8	+21.1	81.4	25 28.5	+22.2	81.9	25 36.7	+23.3	82.3	25 44.5	+24.3	82.8	25 51.7	+25.4	83.3	18
19	25 08.6	+17.5	79.0	25 19.9	+18.5	79.4	25 30.6	+19.7	79.9	25 40.9	+20.7	80.4	25 50.7	+21.8	80.8	26 00.0	+22.9	81.3	26 08.8	+23.9	81.8	26 17.1	+25.0	82.3	19
20	25 26.1	+17.0	77.9	25 38.4	+18.1	78.4	25 50.3	+19.1	78.8	26 01.6	+20.3	79.3	26 12.5	+21.3	79.8	26 22.9	+22.4	80.3	26 32.7	+23.5	80.8	26 42.1	+24.5	81.3	20
21	25 43.1	+16.5	76.8	25 56.5	+17.6	77.3	26 09.4	+18.8	77.8	26 21.9	+19.8	78.3	26 33.8	+20.9	78.8	26 45.3	+21.9	79.3	26 56.2	+23.0	79.8	27 06.6	+24.1	80.3	21
22	25 59.6	+16.1	75.8	26 14.1	+17.2	76.2	26 28.2	+18.2	76.7	26 41.7	+19.3	77.2	26 54.7	+20.4	77.7	27 07.2	+21.5	78.2	27 19.2	+22.6	78.7	27 30.7	+23.6	79.2	22
23	26 15.7	+15.6	74.7	26 31.3	+16.7	75.2	26 46.4	+17.8	75.7	27 01.0	+18.9	76.2	27 15.1	+19.9	76.7	27 28.7	+21.0	77.2	27 41.8	+22.1	77.7	27 54.3	+23.2	78.2	23
24	26 31.3	+15.1	73.6	26 48.0	+16.2	74.1	27 04.2	+17.2	74.6	27 19.9	+18.3	75.1	27 35.0	+19.5	75.6	27 49.7	+20.5	76.1	28 03.9	+21.6	76.6	28 17.5	+22.7	77.1	24
25	26 46.4	+14.6	72.5	27 04.2	+15.7	73.0	27 21.4	+16.8	73.5	27 38.2	+17.9	74.0	27 54.5	+18.9	74.5	28 10.2	+20.1	75.0	28 25.5	+21.1	75.6	28 40.2	+22.1	76.1	25
26	27 01.0	+14.1	71.5	27 19.9	+15.1	71.9	27 38.2	+16.3	72.4	27 56.1	+17.3	72.9	28 13.4	+18.5	73.4	28 30.3	+19.5	74.0	28 46.6	+20.6	74.5	29 02.3	+21.7	75.0	26
27	27 15.1	+13.6	70.4	27 35.0	+14.7	70.8	27 54.5	+15.7	71.3	28 13.4	+16.9	71.9	28 31.9	+17.9	72.4	28 49.8	+19.0	72.9	29 07.2	+20.0	73.4	29 24.0	+21.2	74.0	27
28	27 28.7	+13.1	69.3	27 49.7	+14.2	69.8	28 10.2	+15.3	70.3	28 30.3	+16.3	70.8	28 49.8	+17.4	71.3	29 08.8	+18.4	71.8	29 27.2	+19.6	72.3	29 45.2	+20.6	72.9	28
29	27 41.8	+12.5	68.2	28 03.9	+13.6	68.7	28 25.5	+14.7	69.2	28 46.6	+15.7	69.7	29 07.2	+16.8	70.2	29 27.2	+18.0	70.7	29 46.8	+19.0	71.2	30 05.8	+20.1	71.8	29
30	27 54.3	+12.1	67.1	28 17.5	+13.1	67.5	28 40.2	+14.1	68.0	29 02.3	+15.3	68.6	29 24.0	+16.3	69.1	29 45.2	+17.4	69.6	30 05.8	+18.5	70.2	30 25.9	+19.6	70.7	30
31	28 06.4	+11.4	65.9	28 30.6	+12.5	66.4	28 54.3	+13.6	66.9	29 17.6	+14.7	67.5	29 40.3	+15.8	68.0	30 02.6	+16.8	68.5	30 24.3	+17.9	69.1	30 45.5	+19.0	69.6	31
32	28 17.8	+11.0	64.8	28 43.1	+12.0	65.3	29 07.9	+13.1	65.8	29 32.3	+14.1	66.3	29 56.1	+15.2	66.9	30 19.4	+16.3	67.4	30 42.2	+17.3	67.9	31 04.5	+18.4	68.5	32
33	28 28.8	+10.4	63.7	28 55.1	+11.5	64.2	29 21.0	+12.5	64.7	29 46.4	+13.5	65.2	30 11.3	+14.6	65.7	30 35.7	+15.7	66.3	30 59.5	+16.8	66.8	31 22.9	+17.8	67.4	33
34	28 39.2	+9.8	62.6	30 06.6	+10.8	63.1	30 33.5	+11.9	63.6	31 59.9	+13.0	64.1	31 49.6	+14.2	64.6	31 05.4	+15.1	65.2	31 16.3	+16.2	65.7	31 40.7	+17.3	66.3	34
35	28 49.0	+9.3	61.5	29 17.4	+10.3	62.0	29 45.4	+11.4	62.5	30 12.9	+12.4	63.0	30 39.9	+13.5	63.5	31 06.5	+14.5	64.0	31 32.5	+15.6	64.6	31 58.0	+16.6	65.1	35
36	28 58.3	+8.7	60.3	29 27.7	+9.8	60.8	29 56.8	+10.7	61.3	30 25.3	+11.8	61.8	30 53.4	+12.9	62.4	31 21.0	+13.9	62.9	31 48.1	+14.9	63.4	32 14.6	+16.1	64.0	36
37	29 07.0	+8.1	59.2	29 37.5	+9.1	59.7	30 07.5	+10.2	60.7	30 37.1	+11.2	61.2	31 34.9	+13.3	61.8	32 03.0	+14.4	62.3	32						

**LATITUDE CONTRARY NAME TO DECLINATION**

**L.H.A. 70°, 290°**

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	18	21.0	-24.8	98.1	18	12.4	-25.8	98.4	18	03.5	-26.8	98.7	17	54.2	-27.8	99.1	17	44.6	-28.8	99.4	17	34.6	-29.7	99.7	17	24.3	-30.6	100.0	17	13.8	-31.6	100.3	0
1	17	56.2	-25.1	99.1	17	46.6	-26.1	99.4	17	36.7	-27.1	99.7	17	26.4	-28.0	100.0	17	15.8	-28.9	100.3	17	04.9	-29.9	100.6	16	53.7	-30.8	100.9	16	42.2	-31.7	101.2	1
2	17	31.1	-25.4	100.0	17	20.5	-26.4	100.3	17	09.6	-27.3	100.6	16	58.4	-28.3	100.9	16	46.9	-29.3	101.2	16	35.0	-30.1	101.5	16	22.9	-31.1	101.8	16	10.5	-32.0	102.1	2
3	17	05.7	-25.7	101.0	16	54.1	-26.6	101.3	16	42.3	-27.6	101.6	16	30.1	-28.5	101.8	16	17.6	-29.4	102.1	16	04.9	-30.4	102.4	15	51.8	-31.2	102.7	15	38.5	-32.2	103.0	3
4	16	40.0	-25.9	101.9	16	27.5	-26.9	102.2	16	14.7	-27.8	102.5	16	01.6	-28.8	102.8	15	48.2	-29.7	103.0	15	34.5	-30.6	103.3	15	20.6	-31.5	103.6	15	06.3	-32.3	103.8	4
5	16	14.1	-26.2	102.8	16	06.6	-27.1	103.1	15	46.9	-28.1	103.4	15	32.8	-29.0	103.7	15	18.5	-29.9	103.9	15	03.9	-30.8	104.2	14	49.1	-31.7	104.5	14	34.0	-32.6	104.7	5
6	15	47.9	-26.4	103.8	15	33.5	-27.3	104.0	15	18.8	-28.3	104.3	15	03.8	-29.1	104.6	14	48.6	-30.1	104.8	14	33.1	-31.0	105.1	14	17.4	-31.9	105.3	14	01.4	-32.8	105.6	6
7	15	21.5	-26.6	104.7	15	06.2	-27.6	105.0	14	50.5	-28.4	105.2	14	34.7	-29.4	105.5	14	18.5	-30.3	105.7	14	02.1	-31.2	106.0	13	45.5	-32.1	106.2	13	28.6	-32.9	106.4	7
8	14	54.9	-26.8	105.6	14	38.6	-27.8	105.9	14	22.1	-28.7	106.1	14	05.3	-29.6	106.4	13	48.2	-30.5	106.6	13	30.9	-31.3	106.9	13	13.4	-32.2	107.1	12	55.7	-33.1	107.3	8
9	14	28.1	-27.1	106.6	14	10.8	-28.0	106.8	13	53.4	-28.9	107.0	13	35.7	-29.8	107.3	13	17.7	-30.7	107.5	12	59.6	-31.6	107.7	12	41.2	-32.4	107.9	12	22.6	-33.3	108.2	9
10	14	01.0	-27.3	107.5	13	42.8	-28.1	107.7	13	24.5	-29.1	107.9	13	05.9	-30.0	108.2	12	47.0	-30.8	108.4	12	28.0	-31.7	108.6	12	08.8	-32.6	108.8	11	49.3	-33.4	109.0	10
11	13	33.7	-27.5	108.4	13	14.7	-28.4	108.6	12	55.4	-29.3	108.8	12	35.9	-30.2	109.1	12	16.2	-31.0	109.3	11	56.3	-31.9	109.5	11	36.2	-32.7	109.7	11	15.9	-33.5	109.9	11
12	13	06.2	-27.7	109.3	12	46.3	-28.6	109.5	12	26.1	-29.4	109.7	12	05.7	-30.3	109.9	11	45.2	-31.2	110.1	11	24.4	-32.0	110.3	11	03.5	-32.9	110.5	10	42.4	-33.7	110.7	12
13	12	38.5	-27.8	110.2	12	17.7	-28.7	110.4	11	56.7	-29.6	110.6	11	35.4	-30.4	110.8	11	14.0	-31.3	111.0	10	52.4	-32.4	111.2	10	30.6	-33.0	111.4	10	08.7	-33.9	111.5	13
14	12	10.7	-28.0	111.1	11	49.0	-28.9	111.3	11	27.1	-29.8	111.5	11	05.0	-30.7	111.7	10	42.7	-31.5	111.9	9	57.6	-33.1	112.2	9	34.8	-33.9	112.4	14				
15	11	42.7	-28.2	112.0	11	20.1	-29.1	112.2	10	57.3	-29.9	112.4	10	34.3	-30.7	112.6	10	11.2	-31.6	112.7	9	47.9	-32.4	112.9	9	00.9	-34.0	113.1	15				
16	11	14.5	-28.4	112.9	10	51.0	-29.2	113.1	10	27.4	-30.1	113.3	10	03.6	-31.0	113.5	9	39.6	-31.7	113.6	9	15.5	-32.6	113.8	8	51.3	-33.3	113.9	8	26.9	-34.2	114.0	16
17	10	46.1	-28.5	113.8	10	21.8	-29.4	114.0	9	57.3	-30.2	114.2	9	32.6	-31.0	114.3	9	07.9	-31.9	114.5	8	42.9	-32.6	114.6	8	17.9	-33.5	114.8	7	52.7	-34.3	114.9	17
18	10	17.6	-28.7	114.7	9	52.4	-29.5	114.9	9	27.1	-30.4	115.0	9	01.6	-31.2	115.2	8	36.0	-32.0	115.3	8	10.3	-32.8	115.5	7	44.4	-33.5	115.6	7	18.4	-34.3	115.7	18
19	9	48.9	-28.8	115.6	9	22.9	-29.6	115.8	8	56.7	-30.4	115.9	8	30.4	-31.2	116.1	8	04.0	-32.0	116.2	7	37.5	-32.9	116.3	6	44.1	-34.4	116.5	19				
20	9	20.1	-28.9	116.5	8	53.3	-29.8	116.7	8	26.3	-30.6	116.8	7	59.2	-31.4	116.9	7	32.0	-32.2	117.0	7	04.6	-32.9	117.2	6	37.2	-33.7	117.3	20				
21	8	51.2	-29.1	117.4	8	23.5	-29.9	117.5	7	55.7	-30.7	117.7	7	27.8	-31.5	117.8	6	59.8	-32.3	117.9	6	31.7	-33.1	118.1	5	35.2	-34.6	118.2	21				
22	8	22.1	-29.2	118.3	7	53.6	-30.0	118.4	7	25.0	-30.8	118.5	6	56.3	-31.6	118.6	6	27.5	-32.3	118.7	5	58.6	-33.1	118.8	5	29.6	-33.8	118.9	22				
23	7	52.9	-29.3	119.2	7	23.6	-30.1	119.3	6	54.2	-30.8	119.4	6	24.7	-31.6	119.5	5	55.2	-32.5	119.6	5	25.5	-33.2	119.7	4	26.0	-34.7	119.8	23				
24	7	23.6	-29.4	120.0	6	53.5	-30.1	120.2	6	23.4	-31.0	120.3	5	53.1	-31.8	120.3	5	22.7	-32.5	120.4	4	52.3	-33.2	120.5	3	51.3	-34.8	120.6	24				
25	6	54.2	-29.5	120.9	6	23.4	-30.3	121.0	5	52.4	-31.1	121.1	5	21.3	-31.8	121.2	4	50.2	-32.5	121.3	4	19.1	-33.4	121.4	3	47.8	-34.0	121.5	25				
26	6	24.7	-29.5	121.8	5	53.1	-30.4	121.9	5	21.3	-31.1	122.0	4	49.5	-31.8	122.0	4	17.7	-32.6	122.1	3	45.7	-33.3	122.2	2	41.8	-34.9	122.3	26				
27	5	55.2	-29.7	122.7	5	22.7	-30.4	122.8	4	50.2	-31.1	122.8	4	17.7	-32.0	122.9	3	45.1	-32.7	123.0	3	12.4	-33.4	123.0	2	39.7	-34.8	123.1	27				
28	5	25.5	-29.7	123.5	4	52.3	-30.5	123.6	3	49.8	-31.3	123.7	3	45.7	-31.9	123.7	3	12.4	-32.7	123.8	2	39.0	-34.2	123.9	1	32.1	-34.8	123.9	28				
29	4	55.8	-29.8	124.4	4	21.8	-30.5	124.5	3	47.8	-31.3	124.5	3	13.8	-32.4	124.6	2	39.7	-32.8	124.6	1	0.6	-35.6	124.7	0	57.3	-34.9	124.7	29				
30	4	26.0	-29.9	125.3	3	51.3	-30.6	125.3	3	16.5	-31.3	125.4	2	41.8	-32.1	125.4	2	0.6	-32.7	125.5	1	32.1	-33.5	125.5	0	22.4	-34.9	125.5	30				
31	3	56.1	-29.9	126.2	3	20.7	-30.7	126.2	2	45.2	-31.4	126.3	2	0.9	-32.1	126.3	0	28.0	+32.8	126.4	0	58.6	-33.4	126.3	0	12.5	+34.8	126.3	31				
32	3	26.2	-30.0	127.0	2	50.0	-30.7	127.1	2	13.8	-31.4	127.1	1	37.6	-32.1	127.1	1	0.1	-32.8	127.2	0	28.0	+32.5	127.2	0	11.1	+34.2	127.2	32				
33	2	56.2	-30.0	127.9	1	19.3	-30.7	127.9	1	42.4	-31.4	128.0	1	05.5	-32.1	128.0	0	28.6	+32.8	128.0	0	0.8	+33.5	127.9	0	21.2	+34.8	127.9	33				
34	2	26.2	-30.0	128.8	1	14.6	-30.7	128.8	0	33.4	-32.1	128.8	1	27.1	-32.1	128.9	0	0.42	+32.8	128.9	0	37.0	+32.8	128.9	0	19.8	+34.8	128.9	34				
35	1	156.2	-30.1	129.6	0	17.9	-30.8	129.7	0	0.96	-32.																						

71°, 289° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.								
0	17	26.3	+24.5	97.7	17	18.2	+25.4	98.0	17	09.7	+26.4	98.3	17	00.9	+27.4	98.6	16	51.8	+28.3	98.9	16	42.4	+29.2	99.2	16	32.6	+30.3	99.5	16	22.6	+31.2	99.8	0
1	17	50.8	+24.1	96.7	17	43.6	+25.1	97.0	17	36.1	+26.1	97.3	17	28.3	+27.1	97.7	17	20.1	+28.1	98.0	17	11.6	+29.1	98.3	17	02.9	+29.9	98.6	16	53.8	+30.9	98.9	1
2	18	14.9	+23.9	95.7	18	08.7	+24.9	96.1	18	02.2	+25.9	96.4	17	55.4	+26.8	96.7	17	48.2	+27.8	97.0	17	40.7	+28.8	97.4	17	32.8	+29.8	97.7	17	24.7	+30.7	98.0	2
3	18	38.8	+23.5	94.8	18	33.6	+24.6	95.1	18	28.1	+25.6	95.4	18	22.2	+26.6	95.8	18	16.0	+27.6	96.1	18	09.5	+28.5	96.4	18	02.6	+29.5	96.8	17	55.4	+30.4	97.1	3
4	19	02.3	+23.3	93.8	18	58.2	+24.3	94.1	18	53.7	+25.3	94.5	18	48.8	+26.3	94.8	18	43.6	+27.2	95.2	18	38.0	+28.2	95.5	18	32.1	+29.2	95.8	18	25.8	+30.2	96.2	4
5	19	25.6	+22.9	92.8	19	22.5	+23.9	93.2	19	19.0	+24.9	93.5	19	15.1	+26.0	93.9	19	10.8	+27.0	94.2	19	06.2	+28.0	94.6	19	01.3	+28.9	94.9	18	56.0	+29.9	95.3	5
6	19	48.5	+22.7	91.8	19	46.4	+23.7	92.2	19	43.9	+24.7	92.6	19	41.1	+25.6	92.9	19	37.8	+26.7	93.3	19	34.2	+27.7	93.6	19	30.2	+28.7	94.0	19	25.9	+29.6	94.3	6
7	20	11.2	+22.3	90.9	20	10.1	+23.3	91.2	20	08.6	+24.3	91.6	20	06.7	+25.4	92.0	20	04.5	+26.4	92.3	20	01.9	+27.3	92.7	19	58.9	+28.3	93.1	19	55.5	+29.3	93.4	7
8	20	33.5	+21.9	89.9	20	33.4	+23.0	90.2	20	32.9	+24.1	90.6	20	32.1	+25.0	91.0	20	30.9	+26.0	91.4	20	29.2	+27.1	91.7	20	27.2	+28.1	92.1	20	24.8	+29.0	92.5	8
9	20	55.4	+21.6	88.9	20	56.4	+22.6	89.3	20	57.0	+23.6	89.6	20	57.1	+24.8	90.0	20	56.9	+25.7	90.4	20	56.3	+26.7	90.8	20	55.3	+27.7	91.2	20	53.8	+28.8	91.6	9
10	21	17.0	+21.3	87.9	21	19.0	+22.3	88.3	21	20.6	+23.4	88.7	21	21.9	+24.3	89.0	21	22.6	+25.4	89.4	21	23.0	+26.4	89.8	21	23.0	+27.4	90.2	21	22.6	+28.4	90.6	10
11	21	38.3	+20.8	86.9	21	41.3	+22.0	87.3	21	44.0	+23.0	87.7	21	46.2	+24.0	88.1	21	48.0	+25.1	88.5	21	49.4	+26.1	88.9	21	50.4	+27.1	89.3	21	51.0	+28.1	89.7	11
12	21	59.1	+20.6	85.9	22	03.3	+21.5	86.3	22	07.0	+22.6	86.7	22	10.2	+23.7	87.1	22	13.1	+24.7	87.5	22	15.5	+25.7	87.9	22	17.5	+26.7	88.3	22	19.1	+27.7	88.7	12
13	22	19.7	+20.1	84.8	22	24.8	+21.2	85.3	22	29.6	+22.2	85.7	22	33.9	+23.3	86.1	22	37.8	+24.3	86.5	22	41.2	+25.4	86.9	22	44.2	+26.4	87.3	22	46.8	+27.4	87.7	13
14	22	39.8	+19.7	83.8	22	46.0	+20.8	84.2	22	51.8	+21.9	84.7	22	57.2	+22.9	85.1	23	02.1	+24.0	85.5	23	06.6	+25.0	85.9	23	10.6	+26.1	86.4	23	14.2	+27.1	86.8	14
15	22	59.5	+19.4	82.8	23	06.8	+20.4	83.2	23	13.7	+21.5	83.6	23	20.1	+22.5	84.1	23	26.1	+23.5	84.5	23	31.6	+24.6	84.9	23	36.7	+25.6	85.4	23	41.3	+26.6	85.8	15
16	23	18.9	+18.9	81.8	23	27.2	+20.0	82.2	23	35.2	+21.0	82.6	23	42.6	+22.2	83.1	23	49.6	+23.2	83.5	23	56.2	+24.2	83.9	24	02.3	+25.3	84.4	24	07.9	+26.3	84.8	16
17	23	37.8	+18.5	80.7	23	47.2	+19.6	81.2	23	56.2	+20.7	81.6	24	04.8	+21.7	82.0	24	12.8	+22.8	82.5	24	20.4	+23.9	82.9	24	27.6	+24.8	83.4	24	34.2	+26.0	83.8	17
18	23	56.3	+18.1	79.7	24	06.8	+19.2	80.1	24	16.9	+20.2	80.6	24	26.5	+21.3	81.0	24	35.6	+22.4	81.5	24	44.3	+23.4	81.9	24	52.4	+24.5	82.4	25	00.2	+25.5	82.9	18
19	24	14.4	+17.7	78.7	24	26.0	+18.8	79.1	24	37.1	+19.9	79.5	24	47.8	+20.8	80.0	24	58.0	+21.9	80.5	25	07.7	+23.0	80.9	25	16.9	+24.1	81.4	25	25.7	+25.1	81.8	19
20	24	32.1	+17.2	77.6	24	44.8	+18.3	78.1	24	57.0	+19.3	78.5	25	08.7	+20.4	79.0	25	19.9	+21.5	79.4	25	30.7	+22.6	79.9	25	41.0	+23.6	80.4	25	50.8	+24.7	80.8	20
21	24	49.3	+16.8	76.5	25	03.1	+17.8	77.0	25	16.3	+19.0	77.5	25	29.1	+20.0	77.9	25	41.4	+21.1	78.4	25	53.3	+22.1	78.9	26	04.6	+23.2	79.8	21	51.5	+24.2	79.8	21
22	25	06.1	+16.4	75.5	25	20.9	+17.5	75.9	25	35.3	+18.5	76.4	25	49.1	+19.6	76.9	26	02.5	+20.6	77.4	26	15.4	+21.7	77.8	26	27.8	+22.8	78.3	26	39.7	+23.8	78.8	22
23	25	22.5	+15.9	74.4	25	38.4	+16.9	74.9	25	53.8	+18.0	75.4	26	08.7	+19.1	75.8	26	23.1	+20.2	76.3	26	37.1	+21.2	76.8	26	50.6	+22.3	77.3	27	03.5	+23.4	77.8	23
24	25	38.4	+15.4	73.4	25	55.3	+16.5	73.8	26	11.8	+17.5	74.3	26	27.8	+18.6	74.8	26	43.3	+19.7	75.3	26	58.3	+20.8	75.7	27	12.9	+21.8	76.2	27	26.9	+22.9	76.7	24
25	25	53.8	+14.9	72.3	26	11.8	+16.0	72.8	26	29.3	+17.1	73.2	26	46.4	+18.2	73.7	27	03.0	+19.2	74.2	27	19.1	+20.3	74.7	27	34.7	+21.3	75.2	27	49.8	+22.4	75.7	25
26	26	08.7	+14.4	71.2	26	27.8	+15.5	71.7	26	46.4	+16.6	72.2	27	04.6	+17.6	72.6	27	22.2	+18.8	73.1	27	39.4	+19.8	73.6	27	56.0	+20.9	74.1	28	12.2	+21.9	74.6	26
27	26	23.1	+14.0	70.1	26	43.3	+15.0	70.6	27	03.0	+16.1	71.1	27	22.2	+17.2	71.6	27	41.0	+18.2	72.1	27	59.2	+19.3	72.6	28	16.9	+20.4	73.1	28	34.1	+21.5	73.6	27
28	26	37.1	+13.5	69.0	26	58.3	+14.6	69.5	27	19.1	+15.6	70.0	27	39.4	+16.6	70.5	27	59.2	+17.7	71.0	28	18.5	+18.8	71.5	28	37.3	+19.9	72.0	28	55.6	+20.9	72.5	28
29	26	50.6	+12.9	67.9	27	12.9	+14.0	68.4	27	34.7	+15.1	68.9	27	56.0	+16.2	69.4	28	18.9	+15.0	69.8	28	37.3	+18.3	70.4	28	57.2	+20.4	71.5	29	16.5	+20.4	71.5	29
30	28	00.5	+9.8	61.3	28	29.1	+10.8	61.8	28	57.2	+11.9	62.3	29	24.9	+12.9	62.8	29	52.1	+14.0	63.3	30	18.9	+15.0	63.8	30	45.1	+16.1	64.3	31	10.9	+17.1	64.9	35
31	28	10.3	+9.3	60.2	28	39.9	+10.3	60.7	29	09.1	+11.3	61.1	29	37.8	+12.3	61.6	30	06.1	+13.3	62.2	30	33.9	+14.4	62.7	31	01.2	+15.4	63.2	31	28.0	+16.5	63.7	36
32	28	19.6	+8.7	59.1	28	50.2	+9.7	59.5	29	20.4	+10.7	60.0	29	50.1	+11.8	60.5	30	19.4	+12.8	61.0	30	48.3	+13.8	61.5	31	16.6	+14.9	62.1	31	44.5	+15.9	62.6	37
33	28	28.3	+8.1	58.0	28	59.9	+9.1	58.4	29	31.1	+10.2	58.9	30	01.9	+11.1	59.4	30	32.2	+12.2														

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $71^\circ$ ,  $289^\circ$

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	17	26.3	-24.7	97.7	17	18.2	-25.7	98.0	17	09.7	-26.7	98.3	17	00.9	-27.6	98.6	16	51.8	-28.6	98.9	16	42.4	-29.6	99.2	16	32.6	-30.4	99.5	16	22.6	-31.4	99.8	0
1	17	01.6	-25.0	98.6	16	52.5	-26.0	98.9	16	43.0	-26.9	99.2	16	33.3	-27.9	99.5	16	23.2	-28.8	99.8	16	12.8	-29.7	100.1	16	02.2	-30.7	100.4	15	51.2	-31.6	100.7	1
2	16	36.6	-25.2	99.6	16	26.5	-26.2	99.9	16	16.1	-27.2	100.1	16	05.4	-28.1	100.4	15	54.4	-29.1	100.7	15	43.1	-30.0	101.0	15	31.5	-30.9	101.3	15	19.6	-31.8	101.5	2
3	16	11.4	-25.5	100.5	16	00.3	-26.4	100.8	15	48.9	-27.4	101.1	15	37.3	-28.4	101.4	15	25.3	-29.3	101.6	15	13.1	-30.2	101.9	15	00.6	-31.1	102.2	14	47.8	-32.0	102.4	3
4	15	45.9	-25.7	101.5	15	33.9	-26.7	101.7	15	21.5	-27.6	102.0	15	08.9	-28.5	102.3	14	56.0	-29.4	102.5	14	42.9	-30.4	102.8	14	29.5	-31.3	103.0	14	15.8	-32.2	103.3	4
5	15	20.2	-26.0	102.4	15	07.2	-26.1	102.7	14	53.9	-27.8	102.9	14	40.4	-28.8	103.2	14	26.6	-29.7	103.4	14	12.5	-30.6	103.7	13	58.2	-31.5	103.9	13	43.6	-32.3	104.2	5
6	14	54.2	-26.1	103.3	14	40.3	-27.1	103.6	14	26.1	-28.1	103.8	14	11.6	-29.0	104.1	13	56.9	-29.9	104.3	13	41.9	-30.8	104.6	13	26.7	-31.7	104.8	13	11.3	-32.6	105.0	6
7	14	28.1	-26.4	104.3	14	13.2	-27.4	104.5	13	58.0	-28.2	104.7	13	42.6	-29.2	105.0	13	27.0	-30.1	105.2	13	11.1	-30.9	105.4	12	55.0	-31.8	105.7	12	38.7	-32.7	105.9	7
8	14	01.7	-26.6	105.2	13	45.8	-27.5	105.4	13	29.8	-28.5	105.7	13	13.4	-29.3	105.9	12	56.9	-30.2	106.1	12	40.2	-31.2	106.3	12	06.0	-32.0	106.7	8				
9	13	35.1	-26.9	106.1	13	18.3	-27.7	106.3	13	01.3	-28.6	106.6	12	44.1	-29.5	106.8	12	26.7	-30.5	107.0	12	09.0	-31.3	107.2	11	51.2	-32.2	107.4	9				
10	13	08.2	-27.0	107.0	12	50.6	-28.0	107.2	12	32.7	-28.9	107.5	12	14.6	-29.8	107.7	11	56.2	-30.5	107.9	11	37.7	-31.4	108.1	11	19.0	-32.3	108.3	11	00.1	-33.1	108.5	10
11	12	41.2	-27.2	107.9	12	22.6	-28.1	108.2	12	03.8	-29.0	108.4	11	44.8	-29.8	108.6	11	25.7	-30.8	108.8	11	06.3	-31.6	108.9	10	46.7	-32.5	109.1	10	27.0	-33.3	109.3	11
12	12	14.0	-27.4	108.9	11	54.5	-28.2	109.1	11	34.8	-29.1	109.3	11	15.0	-30.1	109.4	10	54.9	-30.9	109.6	10	34.7	-31.8	109.8	10	14.2	-32.5	110.0	9	53.7	-33.5	110.1	12
13	11	46.6	-27.5	109.8	11	26.3	-28.5	110.0	11	05.7	-29.3	110.1	10	44.9	-30.1	110.3	10	24.0	-31.0	110.5	10	02.9	-31.9	110.7	9	41.7	-32.8	110.8	9	20.2	-33.5	111.0	13
14	11	19.1	-27.7	110.7	10	57.8	-28.6	110.9	10	36.4	-29.5	111.0	10	14.8	-30.4	111.2	9	53.0	-31.2	111.4	9	31.0	-32.0	111.5	8	46.7	-33.6	111.8	14				
15	10	51.4	-27.9	111.6	10	29.2	-28.7	111.7	10	06.9	-29.6	111.9	9	44.4	-30.4	112.1	9	21.8	-31.3	112.2	8	59.0	-32.1	112.4	8	13.1	-33.8	112.7	15				
16	10	23.5	-28.0	112.5	10	00.5	-28.9	112.6	9	37.3	-29.7	112.8	9	14.0	-30.6	113.0	8	50.5	-31.4	113.1	8	26.9	-32.2	113.2	8	03.2	-33.1	113.4	7				
17	9	55.5	-28.2	113.4	9	31.6	-29.0	113.5	9	07.6	-29.9	113.7	8	43.4	-30.7	113.8	8	19.1	-31.5	114.0	7	54.7	-32.4	114.1	7	30.1	-33.1	114.2	17				
18	9	27.3	-28.3	114.3	9	02.6	-29.2	114.4	8	37.7	-30.0	114.6	8	12.7	-30.8	114.7	7	47.6	-31.6	114.8	7	22.3	-32.4	114.9	6	57.0	-33.3	115.1	18				
19	8	59.0	-28.4	115.2	8	33.4	-29.2	115.3	8	07.7	-30.1	115.4	7	41.9	-30.9	115.6	7	16.0	-31.8	115.7	6	49.9	-32.5	115.8	6	57.5	-34.1	116.0	19				
20	8	30.6	-28.6	116.1	8	04.2	-29.4	116.2	7	37.6	-30.2	116.3	7	11.0	-31.0	116.4	6	44.2	-31.8	116.5	6	17.4	-32.6	116.6	5	50.4	-33.4	116.7	20				
21	8	02.0	-28.6	116.9	7	34.8	-29.5	117.1	7	07.4	-30.3	117.2	6	40.0	-31.1	117.3	6	12.4	-31.9	117.4	5	44.8	-32.7	117.5	5	17.0	-33.4	117.6	21				
22	7	33.4	-28.8	117.8	7	05.3	-29.6	117.9	6	37.1	-30.4	118.0	6	08.9	-31.2	118.1	5	40.5	-31.9	118.2	5	12.1	-32.7	118.3	4	43.6	-33.5	118.4	22				
23	7	04.6	-28.9	118.7	6	35.7	-29.7	118.8	6	06.7	-30.4	118.9	5	37.7	-31.3	119.0	5	08.6	-32.1	119.1	4	39.4	-32.9	119.2	4	10.1	-33.6	119.2	23				
24	6	35.7	-29.0	119.6	6	06.0	-29.7	119.7	5	36.3	-30.6	119.8	5	06.4	-31.3	119.9	4	36.5	-32.1	119.9	4	06.5	-32.8	120.0	3	36.5	-33.6	120.1	24				
25	6	06.7	-29.0	120.5	5	36.3	-29.9	120.6	5	05.7	-30.6	120.6	4	35.1	-31.4	120.7	4	04.4	-32.1	120.8	3	33.7	-32.9	120.8	3	02.9	-33.6	120.9	2	32.1	-34.4	120.9	25
26	5	37.7	-29.1	121.4	5	06.4	-29.9	121.4	4	35.1	-30.7	121.5	4	03.7	-31.4	121.6	3	32.3	-32.2	121.6	3	00.8	-33.0	121.7	1	57.7	-34.4	121.8	26				
27	5	08.6	-29.2	122.2	4	36.5	-30.0	122.3	4	04.4	-30.7	122.4	3	32.3	-31.5	122.4	3	00.1	-32.3	122.5	2	27.8	-32.9	122.5	1	23.3	-33.7	122.6	27				
28	4	39.4	-29.3	123.1	4	06.5	-30.0	123.2	3	33.7	-30.8	123.2	3	00.8	-31.5	123.3	2	27.8	-32.2	123.3	1	54.9	-33.0	123.4	0	48.9	-34.5	123.4	28				
29	4	10.1	-29.3	124.0	3	36.5	-30.1	124.0	3	02.9	-30.8	124.1	2	29.3	-31.3	124.2	1	21.9	-33.0	124.2	0	48.2	-33.4	124.2	0	14.4	-34.4	124.2	29				
30	3	40.8	-29.4	124.9	3	06.4	-30.1	124.9	2	32.1	-30.9	125.0	1	57.7	-31.6	125.0	0	48.9	-33.1	125.0	0	14.4	-33.7	125.0	0	20.0	+34.5	55.0	30				
31	3	11.4	-29.4	125.7	2	36.3	-30.1	125.8	2	01.2	-30.9	125.8	1	26.1	-31.4	125.8	0	51.0	-32.3	125.8	0	15.8	-33.0	125.9	0	54.5	+34.4	54.2	31				
32	2	42.0	-29.5	126.6	2	06.2	-30.2	126.6	1	30.3	-30.9	126.7	0	54.5	-31.6	126.7	0	18.7	-32.4	126.7	0	20.7	+33.0	55.0	32								
33	2	12.5	-29.5	127.5	1	36.0	-30.2	127.5	0	59.4	-30.9	127.5	0	22.9	-31.6	127.5	0	13.7	+32.3	52.5	0	50.2	+33.0	52.5	0	26.8	+33.7	52.5	33				
34	1	43.0	-29.5	128.4	1	05.9	+30.2	49.0	0	28.5	+31.7	51.6	0	08.7	+31.7	51.6	0	46.0	+32.3	51.6	0	23.2	+33.0	51.6	0	20.5	+33.6	51.7	34				
35	0	13.5	-29.5	129.2	0	35.5	-30.2	129.2	0	0.4	+30.9	50.8	1	18.3	+32.3	50.8	1	56.2	+32.1	46.6	1	40.7	+32.7	46.6	1	21.9	+33.4	46.7	40				
36	0	44.0	-29.6	130.1	0	05.3																											

72°, 288° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.				
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.				
0	16	31.6	+24.3	97.2	16	23.9	+25.3	97.5	16	15.8	+26.3	97.8	16	07.5	+27.3	98.1	15	58.9	+28.2	98.4	15	40.8	+30.1	99.0	15	31.3	+31.1	99.2	0
1	16	55.9	+24.0	96.3	16	49.2	+25.0	96.6	16	42.1	+26.1	96.9	16	34.8	+27.0	97.2	16	27.1	+28.0	97.5	16	19.2	+28.9	97.8	16	02.4	+30.8	98.3	1
2	17	19.9	+23.8	95.3	17	14.2	+24.8	95.6	17	08.2	+25.7	95.9	17	01.8	+26.8	96.2	16	55.1	+27.7	96.5	16	48.1	+28.7	96.8	16	33.2	+30.6	97.4	2
3	17	43.7	+23.5	94.4	17	39.0	+24.5	94.7	17	33.9	+25.5	95.0	17	28.6	+26.4	95.3	17	22.8	+27.5	95.6	17	16.8	+28.4	95.9	17	03.8	+30.3	96.5	3
4	18	07.2	+23.2	93.4	18	03.5	+24.2	93.7	17	59.4	+25.3	94.0	17	55.0	+26.3	94.4	17	50.3	+27.4	94.7	17	45.2	+28.2	95.0	17	34.1	+30.1	95.6	4
5	18	30.4	+22.9	92.4	18	27.7	+23.9	92.8	18	24.7	+24.9	93.1	18	21.3	+25.8	93.4	18	17.5	+26.9	93.8	18	13.4	+27.9	94.1	18	09.0	+28.8	94.4	5
6	18	53.3	+22.6	91.4	18	51.6	+23.7	91.8	18	49.6	+24.6	92.1	18	47.2	+25.6	92.5	18	44.4	+26.7	92.8	18	41.3	+27.6	93.1	18	37.8	+28.6	93.5	6
7	19	15.9	+22.3	90.5	19	15.3	+23.3	90.8	19	14.2	+24.4	91.2	19	12.8	+25.4	91.5	19	11.1	+26.3	91.9	19	08.9	+27.4	92.2	19	06.4	+28.4	92.6	7
8	19	38.2	+22.0	89.5	19	38.6	+23.0	89.8	19	38.6	+24.0	90.2	19	38.2	+25.0	90.6	19	37.4	+26.1	90.9	19	36.3	+27.0	91.3	19	34.8	+28.0	91.6	8
9	20	00.2	+21.6	88.5	20	01.6	+22.7	88.9	20	02.6	+23.7	89.2	20	03.2	+24.7	89.6	20	03.5	+25.7	89.9	20	03.3	+26.8	90.3	20	02.8	+27.7	90.7	9
10	20	21.8	+21.3	87.5	20	24.3	+22.3	87.9	20	26.3	+23.4	88.2	20	27.9	+24.4	88.6	20	29.2	+25.4	89.0	20	30.1	+26.4	89.4	20	30.5	+27.5	89.7	10
11	20	43.1	+21.0	86.5	20	46.6	+22.0	86.9	20	49.7	+23.0	87.3	20	52.3	+24.1	87.6	20	54.6	+25.1	88.0	20	56.5	+26.1	88.4	20	59.0	+28.1	89.2	11
12	21	04.1	+20.6	85.5	21	08.6	+21.6	85.9	21	12.7	+22.7	86.3	21	16.4	+23.7	86.7	21	19.7	+24.7	87.0	21	22.6	+25.7	87.4	21	25.1	+26.7	87.8	12
13	21	24.7	+20.2	84.5	21	30.2	+21.3	84.9	21	35.4	+22.3	85.3	21	40.1	+23.4	85.7	21	44.4	+24.4	86.1	21	48.3	+25.5	86.5	21	51.8	+26.5	86.9	13
14	21	44.9	+19.9	83.5	21	51.5	+20.9	83.9	21	57.7	+22.0	84.3	22	03.5	+23.0	84.7	22	08.8	+24.1	85.1	22	13.8	+25.0	85.5	22	22.4	+27.1	86.3	14
15	22	04.8	+19.4	82.5	22	12.4	+20.6	82.9	22	19.7	+21.5	83.3	22	26.5	+22.6	83.7	22	32.9	+23.6	84.1	22	38.8	+24.7	84.5	22	44.4	+25.7	84.9	15
16	22	24.2	+19.1	81.4	22	33.0	+20.1	81.8	22	41.2	+21.3	82.3	22	49.1	+22.3	82.7	22	56.5	+23.3	83.1	23	03.5	+24.4	83.5	23	10.1	+25.4	83.9	16
17	22	43.3	+18.7	80.4	22	53.1	+19.8	80.8	23	02.5	+20.8	81.2	23	11.4	+21.8	81.7	23	19.8	+23.0	82.1	23	27.9	+23.9	82.5	23	35.5	+25.0	83.0	17
18	23	02.0	+18.3	79.4	23	12.9	+19.3	79.8	23	23.3	+20.4	80.2	23	33.2	+21.5	80.7	23	42.8	+22.5	81.1	24	00.5	+24.6	82.0	24	08.6	+25.7	82.4	18
19	23	20.3	+17.9	78.3	23	32.2	+19.0	78.8	23	43.7	+20.0	79.2	23	54.7	+21.1	79.6	24	05.3	+22.1	80.1	24	15.4	+23.2	80.5	24	25.1	+24.2	81.0	19
20	23	38.2	+17.5	77.3	23	51.2	+18.5	77.7	24	03.7	+19.6	78.2	24	15.8	+20.6	78.6	24	27.4	+21.7	79.0	24	38.6	+22.7	79.5	24	49.3	+23.8	80.0	20
21	23	55.7	+17.0	76.3	24	09.7	+18.1	76.7	24	23.3	+19.2	77.1	24	36.4	+20.3	77.6	24	49.1	+21.3	78.0	25	01.3	+22.4	78.5	25	13.1	+23.4	78.9	21
22	24	12.7	+16.6	75.2	24	27.8	+17.7	75.6	24	42.5	+18.7	76.1	24	56.7	+19.7	76.5	25	10.4	+20.8	77.0	25	23.7	+21.9	77.5	25	36.5	+22.9	77.9	22
23	24	29.3	+16.2	74.2	24	45.5	+17.2	74.6	25	01.2	+18.3	75.0	25	16.4	+19.4	75.5	25	31.2	+20.4	76.0	25	45.6	+21.4	76.4	25	59.4	+22.5	76.9	23
24	24	45.5	+15.7	73.1	25	02.7	+16.8	73.5	25	19.5	+17.8	74.0	25	35.8	+18.9	74.4	25	51.6	+20.0	74.9	26	07.0	+21.0	75.4	26	21.9	+22.1	75.9	24
25	25	01.2	+15.2	72.0	25	19.5	+16.3	72.5	25	37.3	+17.4	72.9	25	54.7	+18.4	73.4	26	11.6	+19.5	73.9	26	28.0	+20.6	74.3	26	44.0	+21.6	74.8	25
26	25	16.4	+14.8	71.0	25	35.8	+15.8	71.4	25	54.7	+16.9	71.9	26	13.1	+18.0	72.3	26	31.1	+19.0	72.8	26	48.6	+20.1	73.3	27	05.6	+21.2	73.8	26
27	25	31.2	+14.4	69.9	25	51.6	+15.4	70.3	26	11.6	+16.4	70.8	26	31.1	+17.5	71.3	26	50.1	+18.6	71.7	27	08.7	+19.6	72.2	27	26.8	+20.6	72.7	27
28	25	45.6	+13.8	68.8	26	07.0	+14.9	69.3	26	28.0	+16.0	69.7	26	48.6	+17.0	70.2	27	08.7	+18.1	70.7	27	28.3	+19.1	71.2	27	47.4	+20.2	71.7	28
29	25	59.4	+13.4	67.7	26	21.9	+14.4	68.2	26	44.0	+15.5	68.6	27	05.6	+16.5	69.1	27	26.8	+17.5	69.6	27	47.4	+18.7	70.1	28	07.6	+19.7	70.6	29
30	26	12.8	+12.8	66.6	26	36.3	+14.0	67.1	26	59.5	+14.9	67.6	27	22.1	+16.0	68.0	27	44.3	+17.1	68.5	28	06.1	+18.1	69.0	28	27.3	+19.2	69.5	30
31	26	25.6	+12.4	65.6	26	50.3	+13.4	66.0	27	14.4	+14.5	66.5	27	38.1	+15.6	67.0	28	01.4	+16.6	67.4	28	24.2	+17.6	67.9	28	46.5	+18.6	68.4	31
32	26	38.0	+11.9	64.5	27	03.7	+12.9	64.9	27	28.9	+13.9	65.4	27	53.7	+14.9	65.9	28	16.0	+18.6	66.4	28	41.8	+19.6	67.8	29	28.0	+19.2	67.9	32
33	26	49.9	+11.4	63.4	27	16.6	+12.4	63.8	27	42.8	+13.5	64.3	28	08.6	+14.5	64.8	28	34.0	+15.5	65.3	28	58.9	+16.5	65.8	29	47.2	+18.6	66.8	33
34	27	01.3	+10.8	62.3	27	29.0	+11.8	62.7	27	56.3	+12.8	63.2	28	23.1	+13.9	63.7	29	49.5	+14.9	64.2	29	15.4	+16.0	64.7	29	40.8	+17.1	65.2	34
35	27	12.1	+10.3	61.2	27	40.8	+11.4	61.6	28	37.0	+13.4	62.6	29	04.4	+14.5	63.0	29	31.4	+15.5	63.5	29	57.9	+16.5	64.1	30	23.9	+17.5	64.6	35
36	27	22.4	+9.8	60.0	27	52.2	+10.8	60.5	28	21.5	+11.8	61.0	28	50.4	+12.8	61.4	29	18.9	+13.8	61.9	29	46.9	+14.8	62.4	30	14.4	+15.9	62.9	36
37	27	32.2	+9.3	58.9	28	03.0	+10.2	59.4	28	33.3	+11.3	59.9	29	03.2	+12.3	60.3	29	32.7	+13.3	60.8	30	01.7	+14.4	61.3	30	30.3	+15.4	61.8	37
38																													

**LATITUDE CONTRARY NAME TO DECLINATION**

**L.H.A. 72°, 288°**

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	16 31.6 -24.6	97.2	16 23.9 -25.6	97.5	16 15.8 -26.5	97.8	16 07.5 -27.5	98.1	15 58.9 -28.4	98.4	15 50.0 -29.4	98.7	15 40.8 -30.3	99.0	15 31.3 -31.2	99.2	15 22.1 -32.2	100.1	15 12.9 -33.2	100.3	15 1.3 -34.2	100.5	0		
1	16 07.0 -24.9	98.2	15 58.3 -25.8	98.5	15 49.3 -26.8	98.8	15 40.0 -27.7	99.0	15 30.5 -28.7	99.3	15 20.6 -29.6	99.6	15 10.5 -30.5	99.8	15 00.1 -31.4	100.1	15 21.0 -32.3	104.5	15 32.9 -33.7	101.0	15 42.1 -34.7	101.2	1		
2	15 42.1 -25.0	99.1	15 32.5 -26.1	99.4	15 22.5 -27.0	99.7	15 12.3 -27.9	100.0	15 01.8 -28.9	100.2	14 51.0 -29.8	100.5	14 40.0 -30.8	100.7	14 28.7 -31.7	101.0	14 18.4 -32.7	101.3	14 7.7 -33.7	101.5	14 53.2 -34.7	101.8	2		
3	15 17.1 -25.3	100.1	15 06.4 -26.2	100.3	14 55.5 -27.2	100.6	14 44.4 -28.2	100.9	14 32.9 -29.1	101.1	14 21.2 -30.0	101.4	14 09.2 -30.9	101.6	13 57.0 -31.8	101.9	13 25.2 -32.0	102.2	13 12.9 -33.0	102.5	13 2.9 -34.0	102.7	3		
4	14 51.8 -25.6	101.0	14 40.2 -26.5	101.3	14 28.3 -27.4	101.5	14 16.2 -28.4	101.8	14 03.8 -29.3	102.0	13 51.2 -30.2	102.3	13 38.3 -31.1	102.5	13 25.2 -32.0	102.7	13 12.9 -33.0	102.9	13 2.9 -34.0	103.1	14 26.2 -25.7	102.2	5		
5	14 26.2 -25.7	101.9	14 13.7 -26.7	102.2	14 00.9 -27.7	102.4	13 47.8 -28.6	102.7	13 34.5 -29.5	102.9	13 21.0 -30.4	103.2	13 07.2 -31.3	103.4	12 53.2 -32.2	103.6	12 21.0 -33.3	104.5	12 0.9 -34.3	104.7	12 35.9 -35.1	104.9	12 32.9 -36.1	105.3	6
6	14 00.5 -26.0	102.9	13 47.0 -27.0	103.1	13 33.2 -27.8	103.4	13 19.2 -28.7	103.6	13 05.0 -29.7	103.8	12 50.6 -30.6	104.0	12 35.9 -31.5	104.3	12 21.0 -32.3	104.5	12 0.9 -33.3	104.7	12 35.9 -34.3	104.9	12 32.9 -35.1	105.3	7		
7	13 34.5 -26.2	103.8	13 20.0 -27.1	104.0	13 05.4 -28.1	104.3	12 50.5 -29.0	104.5	12 35.3 -29.8	104.7	12 20.0 -30.7	104.9	12 04.4 -31.6	105.1	11 48.7 -32.5	105.3	11 16.2 -32.7	106.0	11 0.1 -33.6	106.3	11 32.8 -34.0	106.7	11 20.1 -35.0	107.0	8
8	13 08.3 -26.4	104.7	12 52.9 -27.3	105.0	12 37.3 -28.2	105.2	12 21.5 -29.1	105.4	12 05.5 -30.0	105.6	11 49.3 -31.0	105.8	11 32.8 -31.8	106.0	11 16.2 -32.7	106.2	11 0.1 -33.6	106.5	11 32.8 -34.0	106.9	11 20.1 -35.0	107.2	9		
9	12 41.9 -26.5	105.7	12 25.6 -27.5	105.9	12 09.1 -28.4	106.1	11 52.4 -29.3	106.3	11 35.5 -30.2	106.5	11 18.3 -31.0	106.7	11 01.0 -31.8	106.9	10 43.5 -32.8	107.0	10 20.1 -33.6	107.3	10 0.1 -34.4	107.5	10 25.2 -32.0	107.7	10 12.9 -33.0	107.9	10
10	12 15.4 -26.8	106.6	11 58.1 -27.6	106.8	11 40.7 -28.5	107.0	11 23.1 -29.5	107.2	11 05.3 -30.3	107.4	10 47.3 -31.2	107.5	10 29.1 -32.1	107.7	10 10.7 -32.9	107.9	10 21.0 -33.7	108.1	10 0.1 -34.4	108.3	10 25.2 -32.2	108.5	10 12.9 -33.0	108.7	10
11	11 48.6 -26.9	107.5	11 30.5 -27.8	107.7	11 12.2 -28.8	107.9	10 53.6 -29.6	108.1	10 35.0 -30.5	108.2	10 16.1 -31.4	108.4	9 57.0 -32.2	108.6	9 37.8 -33.0	108.8	9 16.2 -32.7	109.0	9 0.9 -33.6	109.3	9 24.8 -32.3	109.4	9 0.8 -33.2	109.6	11
12	11 21.7 -27.1	108.4	11 02.7 -28.0	108.6	10 43.4 -28.8	108.8	10 24.0 -29.7	108.9	10 04.5 -30.6	109.1	9 44.7 -31.4	109.3	9 24.8 -32.3	109.4	9 0.8 -33.2	109.6	9 21.4 -32.7	109.8	9 0.1 -34.4	110.0	9 10.7 -33.8	110.3	9 21.4 -34.0	110.5	13
13	10 54.6 -27.3	109.3	10 34.7 -28.2	109.5	10 14.6 -29.1	109.7	9 54.3 -29.9	109.8	9 33.9 -30.8	110.0	9 13.3 -31.6	110.1	8 52.5 -32.4	110.3	8 31.6 -33.2	110.4	8 21.4 -33.7	110.6	8 0.1 -34.4	110.8	8 20.1 -35.0	111.0	8 10.7 -34.4	111.3	14
14	10 27.3 -27.4	110.2	10 06.5 -28.3	110.4	9 45.5 -29.1	110.6	9 24.4 -30.0	110.7	9 03.1 -30.9	110.9	8 41.7 -31.7	111.0	8 20.1 -32.6	111.1	7 58.4 -33.4	111.3	7 21.4 -34.0	111.5	7 0.1 -34.4	111.7	7 20.1 -35.0	111.9	7 10.7 -34.4	112.1	15
15	9 59.9 -27.5	111.1	9 38.2 -28.4	111.3	9 16.4 -29.3	111.4	8 54.4 -30.2	111.6	8 32.2 -30.9	111.7	8 10.0 -31.9	111.9	7 47.5 -32.6	112.0	7 25.0 -33.4	112.1	7 14.2 -34.0	112.3	7 0.1 -34.4	112.5	7 19.2 -33.6	112.7	6 51.6 -33.6	113.0	16
16	9 32.4 -27.7	112.0	9 09.8 -28.5	112.2	8 47.1 -29.4	112.3	8 24.2 -30.2	112.5	8 0.1 -31.1	112.6	7 38.1 -31.9	112.7	7 14.9 -32.7	112.8	6 51.6 -33.6	113.0	6 18.0 -33.6	113.3	6 44.2 -32.9	113.7	6 18.0 -33.6	113.8	17		
17	9 04.7 -27.8	112.9	8 41.3 -28.7	113.1	8 17.7 -29.5	113.2	7 54.0 -30.4	113.3	7 30.2 -31.2	113.5	7 06.2 -32.0	113.6	6 42.2 -32.9	113.7	6 18.0 -33.6	113.8	6 44.4 -33.7	114.5	6 18.0 -33.6	114.6	6 44.4 -33.7	114.8	18		
18	8 36.9 -28.0	113.8	8 12.6 -28.8	114.0	7 48.2 -29.7	114.1	7 23.6 -30.5	114.2	6 59.0 -31.3	114.3	6 34.2 -32.1	114.4	6 0.9 -32.9	114.5	5 10.7 -33.8	115.3	5 36.4 -32.9	115.5	5 10.7 -33.8	115.7	5 10.7 -34.0	115.9	19		
19	8 08.9 -28.0	114.7	7 43.8 -28.9	114.8	7 18.5 -29.7	115.0	6 53.1 -30.5	115.1	6 27.7 -31.4	115.2	6 0.2 -32.1	115.3	0 46.4 -33.3	115.5	0 0.4 -33.3	115.7	0 28.7 -34.0	115.9	0 0.4 -34.0	116.1	0 28.7 -34.0	116.3	20		
20	7 40.9 -28.2	115.6	7 14.9 -29.0	115.7	6 48.8 -29.8	115.8	6 22.6 -30.7	115.9	5 56.3 -31.5	116.0	5 29.9 -32.2	116.1	5 0.3 -33.1	116.2	4 36.9 -33.8	116.3	4 0.3 -33.9	117.0	4 30.4 -33.9	117.1	4 0.3 -34.0	117.2	21		
21	7 12.7 -28.3	116.5	6 45.9 -29.1	116.6	6 19.0 -30.0	116.7	5 51.9 -30.7	116.8	5 24.8 -31.5	116.9	4 57.7 -32.3	117.0	4 30.4 -33.1	117.1	3 29.2 -33.9	117.9	3 29.2 -33.9	118.0	3 29.2 -33.9	118.1	3 29.2 -33.9	118.3	22		
22	6 44.4 -28.4	117.4	6 16.8 -29.2	117.5	5 49.0 -30.0	117.6	5 21.2 -30.8	117.7	4 53.3 -31.6	117.7	4 25.4 -32.4	117.8	3 57.3 -33.1	117.9	3 29.2 -33.9	117.9	3 29.2 -33.9	118.0	3 29.2 -33.9	118.1	3 29.2 -33.9	118.3	23		
23	6 16.0 -28.4	118.3	5 47.6 -29.3	118.4	5 19.0 -30.0	118.4	4 50.4 -30.8	118.5	4 21.7 -31.6	118.6	3 53.0 -32.4	118.7	3 24.2 -33.2	118.7	2 55.3 -33.9	118.8	2 21.4 -34.0	119.6	2 21.4 -34.0	119.6	2 21.4 -34.0	119.6	24		
24	5 47.6 -28.6	119.2	5 18.3 -29.3	119.2	4 49.0 -30.2	119.3	4 18.8 -30.2	120.2	3 48.6 -30.9	120.2	3 18.4 -31.8	120.3	2 48.1 -32.5	120.3	2 17.8 -33.2	120.4	1 47.4 -34.0	120.4	1 47.4 -34.0	120.4	1 47.4 -34.0	120.4	25		
25	5 19.0 -28.6	120.0	4 49.0 -29.4	120.1	4 18.8 -30.2	120.2	3 48.6 -30.9	120.2	3 18.4 -31.8	120.3	2 46.6 -31.7	120.2	2 14.6 -32.5	121.2	1 44.5 -33.3	121.2	1 13.4 -34.0	121.2	1 13.4 -34.0	121.2	1 13.4 -34.0	121.2	26		
26	4 50.4 -28.7	120.9	4 19.6 -29.5	121.0	3 48.6 -30.2	121.1	3 17.7 -31.1	121.1	2 46.6 -31.2	121.2	2 14.6 -32.5	121.2	1 45.6 -33.3	121.2	0 0.9 -33.6	121.2	0 0.9 -33.6	121.2	0 0.9 -33.6	121.2	0 0.9 -33.6	121.2	27		
27	4 21.7 -28.7	121.8	3 50.1 -29.5	121.9	3 18.4 -30.3	121.9	2 46.6 -31.0	122.0	2 14.9 -31.8	122.0	2 14.9 -32.5	122.0	1 43.1 -32.6	122.0	1 11.2 -33.3	122.1	0 39.4 -34.1	122.1	0 39.4 -34.1	122.1	0 39.4 -34.1	122.1	0 39.4 -34.1	122.1	28
28	3 53.0 -28.8	122.7	3 20.6 -29.6	122.7	2 48.1 -30.3	122.8	2 17.8 -30.4	122.8	1 45.6 -31.1	122.8	1 11.2 -31.8	122.8	0 37.9 -32.6	123.7	0 0.4 -33.6	123.7	0 28.7 -34.0	123.7	0 28.7 -34.0	123.7	0 28.7 -34.0	123.7	0 28.7 -34.0	123.7	29
29	3 24.2 -28.9	123.6	2 51.0 -29.6	123.6	2 0.9 -29.7	123.6	1 51.0 -30.5	123.6	0 20.0 -31.1	123.6	0 11.2 -31.8	123.6	0 37.9 -32.6	123.7	0 0.4 -33.6	123.7	0 28.7 -34.0	123.7	0 28.7 -34.0	123.7	0 28.7 -34.0	123.7	0 28.7 -34.0	123.7	29
30	2 55.3 -28.9	124.4	2 21.4 -29.7	124.5	1 47.4 -30.4	124.5	1 13.4 -31.1	124.5	0 39.4 -31.9	124.5	0 0.5 -32.5	124.5	0 27.2 -32.6	124.5	1 0.2 -34.0	124.5	1 0.2 -34.0								

73°, 287° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	15 36.7 +24.3	96.8		15 29.5 +25.2	97.1		15 21.9 +26.2	97.4		15 14.1 +27.2	97.6		15 06.0 +28.1	97.9		14 57.6 +29.1	98.2		14 49.0 +29.9	98.4		14 40.0 +30.9	98.7		0
1	16 01.0 +23.9	95.9		15 54.7 +24.9	96.1		15 48.1 +26.0	96.4		15 41.3 +26.9	96.7		15 34.1 +27.9	97.0		15 26.7 +28.8	97.3		15 18.9 +29.8	97.5		15 10.9 +30.7	97.8		1
2	16 24.9 +23.7	94.9		16 19.6 +24.8	95.2		16 14.1 +25.7	95.5		16 08.2 +26.6	95.8		16 02.0 +27.6	96.1		15 55.5 +28.6	96.4		15 48.7 +29.6	96.6		15 41.6 +30.5	96.9		2
3	16 48.6 +23.5	93.9		16 44.4 +24.4	94.2		16 39.8 +25.4	94.5		16 34.8 +26.5	94.8		16 29.6 +27.4	95.1		16 24.1 +28.3	95.4		16 18.3 +29.3	95.7		16 12.1 +30.3	96.0		3
4	17 12.1 +23.1	93.0		17 08.8 +24.2	93.3		17 05.2 +25.2	93.6		17 01.3 +26.1	93.9		16 57.0 +27.1	94.2		16 52.4 +28.2	94.5		16 47.6 +29.0	94.8		16 42.4 +30.0	95.1		4
5	17 35.2 +22.8	92.0		17 33.0 +23.9	92.3		17 30.4 +24.9	92.7		17 27.4 +25.8	93.0		17 24.1 +26.9	93.3		17 20.6 +27.8	93.6		17 16.6 +28.9	93.9		17 12.4 +29.8	94.2		5
6	17 58.1 +22.6	91.0		17 56.9 +23.6	91.4		17 55.3 +24.6	91.7		17 53.3 +25.6	92.0		17 51.0 +26.6	92.3		17 48.4 +27.6	92.7		17 45.5 +28.5	93.0		17 42.2 +29.5	93.3		6
7	18 20.7 +22.3	90.1		18 20.5 +23.3	90.4		18 19.9 +24.3	90.7		18 18.9 +25.4	91.1		18 17.6 +26.4	91.4		18 16.0 +27.3	91.7		18 14.0 +28.3	92.1		18 11.7 +29.3	92.4		7
8	18 43.0 +22.0	89.1		18 43.8 +23.0	89.4		18 44.2 +24.0	89.8		18 44.3 +25.0	90.1		18 44.0 +26.0	90.5		18 43.3 +27.0	90.8		18 42.3 +28.0	91.1		18 41.0 +28.9	91.5		8
9	19 05.0 +21.7	88.1		19 06.8 +22.7	88.5		19 08.2 +23.7	88.8		19 09.3 +24.7	89.2		19 10.0 +25.7	89.5		19 10.3 +26.8	89.8		19 10.3 +27.8	90.2		19 09.9 +28.8	90.5		9
10	19 26.7 +21.3	87.1		19 29.5 +22.4	87.5		19 31.9 +23.5	87.8		19 34.0 +24.5	88.2		19 35.7 +25.5	88.5		19 37.1 +26.4	88.9		19 38.1 +27.4	89.3		19 38.7 +28.4	89.6		10
11	19 48.0 +21.0	86.1		19 51.9 +22.0	86.5		19 55.4 +23.0	86.9		19 58.5 +24.1	87.2		20 01.2 +25.1	87.6		20 03.5 +26.2	87.9		20 05.5 +27.1	88.3		20 07.1 +28.1	88.7		11
12	20 09.0 +20.7	85.1		20 13.9 +21.7	85.5		20 18.4 +22.8	85.9		20 22.6 +23.8	86.2		20 26.3 +24.8	86.6		20 29.7 +25.8	87.0		20 32.6 +26.8	87.4		20 35.2 +27.8	87.7		12
13	20 29.7 +20.3	84.1		20 35.6 +21.4	84.5		20 41.2 +22.4	84.9		20 46.4 +23.4	85.3		20 51.1 +24.5	85.6		20 55.5 +25.5	86.0		20 59.4 +26.5	86.4		21 03.0 +27.5	86.8		13
14	20 50.0 +20.0	83.1		20 57.0 +21.1	83.5		21 03.6 +22.1	83.9		21 09.8 +23.1	84.3		21 15.6 +24.1	84.7		21 21.0 +25.1	85.0		21 25.9 +26.2	85.4		21 30.5 +27.2	85.8		14
15	21 10.0 +19.6	82.1		21 18.1 +20.6	82.5		21 25.7 +21.7	82.9		21 32.9 +22.8	83.3		21 39.7 +23.8	83.7		21 46.1 +24.8	84.1		21 52.1 +25.8	84.5		21 57.7 +26.8	84.9		15
16	21 29.6 +19.3	81.1		21 38.7 +20.3	81.5		21 47.4 +21.3	81.9		21 55.7 +22.3	82.3		22 03.5 +23.4	82.7		22 10.9 +24.5	83.1		22 17.9 +25.5	83.5		22 24.5 +26.5	83.9		16
17	21 48.9 +18.9	80.1		21 59.0 +19.9	80.5		22 08.7 +21.0	80.9		22 18.0 +22.1	81.3		22 26.9 +23.1	81.7		22 35.4 +24.1	82.1		22 43.4 +25.1	82.5		22 51.0 +26.1	82.9		17
18	22 07.8 +18.5	79.1		22 18.9 +19.6	79.5		22 29.7 +20.6	79.9		22 40.1 +21.6	80.3		22 50.0 +22.7	80.7		22 59.5 +23.7	81.1		23 08.5 +24.8	81.5		23 17.1 +25.8	82.0		18
19	22 26.3 +18.1	78.0		22 38.5 +19.1	78.4		22 50.3 +20.2	78.8		23 01.7 +21.2	79.3		23 12.7 +22.2	79.7		23 23.2 +23.0	80.1		23 33.3 +24.3	80.5		23 42.9 +25.4	81.0		19
20	22 44.4 +17.6	77.0		22 57.6 +18.8	77.4		23 10.5 +19.8	77.8		23 22.9 +20.9	78.2		23 34.9 +21.9	78.7		23 46.5 +22.9	79.1		23 57.6 +24.0	79.5		24 08.3 +25.0	80.0		20
21	23 02.0 +17.3	76.0		23 16.4 +18.3	76.4		23 30.3 +19.4	76.8		23 43.8 +20.4	77.2		23 56.8 +21.5	77.7		24 09.4 +22.6	78.1		24 21.6 +23.6	78.5		24 33.3 +24.6	79.0		21
22	23 19.3 +16.9	74.9		23 34.7 +18.0	75.3		23 49.7 +19.0	75.8		24 04.2 +20.1	76.2		24 18.3 +21.1	76.6		24 32.0 +22.1	77.1		24 45.2 +23.1	77.5		24 57.9 +24.2	78.0		22
23	23 36.2 +16.5	73.9		23 52.7 +17.5	74.3		24 08.7 +18.5	74.7		24 24.3 +19.6	75.2		24 39.4 +20.7	75.6		24 54.1 +21.7	76.1		25 08.3 +22.8	76.5		25 22.1 +23.8	77.0		23
24	23 52.7 +16.0	72.8		24 10.2 +17.0	73.2		24 27.2 +18.2	73.7		24 43.9 +19.2	74.1		25 00.1 +20.2	74.6		25 15.8 +21.3	75.0		25 31.1 +22.3	75.5		25 45.9 +23.3	75.9		24
25	24 08.7 +15.6	71.8		24 27.2 +16.7	72.2		24 45.4 +17.7	72.6		25 03.1 +18.7	73.1		25 20.3 +19.8	73.5		25 37.1 +20.8	74.0		25 53.4 +21.9	74.5		26 09.2 +23.0	74.9		25
26	24 24.3 +15.1	70.7		24 43.9 +16.2	71.1		25 03.1 +17.2	71.6		25 21.8 +18.3	72.0		25 40.1 +19.3	72.5		25 57.9 +20.4	72.9		26 15.3 +21.4	73.4		26 32.2 +22.4	73.9		26
27	24 39.4 +14.7	69.6		25 00.1 +15.7	70.1		25 20.3 +16.8	70.5		25 40.1 +17.8	71.0		25 59.4 +18.9	71.4		26 18.3 +19.9	71.9		26 36.7 +21.0	72.4		26 54.6 +22.0	72.9		27
28	24 54.1 +14.2	68.6		25 15.8 +15.3	69.0		25 37.1 +16.3	69.5		25 57.9 +17.9	69.9		26 18.3 +18.4	70.4		26 38.2 +19.5	70.8		26 57.7 +20.5	71.3		27 16.6 +21.6	71.8		28
29	25 08.3 +13.8	67.5		25 31.1 +14.8	67.9		25 53.4 +15.4	68.4		26 15.3 +16.9	68.8		26 36.7 +17.9	69.3		26 57.7 +18.6	69.8		27 18.2 +20.0	70.3		27 38.2 +21.0	70.8		29
30	25 22.1 +13.3	66.4		25 45.9 +14.3	66.9		26 09.2 +15.4	67.3		26 32.2 +16.4	67.8		26 54.6 +17.5	68.2		27 16.6 +18.5	68.7		27 38.2 +19.5	69.2		27 59.2 +20.6	69.7		30
31	25 35.4 +12.8	65.3		26 02.0 +13.9	65.8		26 24.6 +14.9	66.2		26 48.6 +15.9	66.7		27 12.1 +16.9	67.2		27 35.1 +18.0	67.6		27 57.7 +19.0	68.1		28 19.8 +20.1	68.6		31
32	25 48.2 +12.4	64.3		26 14.1 +13.3	64.7		26 39.5 +14.4	65.2		27 04.5 +15.4	65.6		27 20.9 +16.5	66.1		27 53.1 +17.6	66.6		28 16.7 +18.6	67.1		28 39.9 +19.6	67.6		32
33	26 00.6 +11.8	63.2		26 27.4 +12.9	63.6		26 53.9 +13.9	64.1		27 04.5 +15.4	64.5		27 45.5 +15.9	65.0		28 10.6 +17.0	65.5		28 35.3 +18.0	66.0		28 59.5 +19.0	66.5		33
34	26 12.4 +11.4	62.1		26 40.3 +12.4	62.5		27 07.8 +13.3	63.0		27 34.8 +14.4	63.4		28 01.4 +15.4	63.9		28 27.6 +16.4	64.4		28 53.3 +17.5	64.9		29 18.5 +18.5	65.4		34
35	26 23.8 +10.8	61.0		26 52.7 +11.8	61.4		27 21.1 +12.9	61.9		27 49.2 +13.9	62.3		28 16.8 +14.9	62.8		28 44.0 +15.9	63.3		29 10.8 +16.9	63.8		29 37.0 +18.0	64.3		35
36	26 34.6 +10.3	59.9		27 04.5 +11.3	60.3		27 34.0 +12.3	60.8		28 03.1 +13.3	61.2		28 31.7 +14.4	61.7		28 59.9 +15.4	62.2		29 27.7 +16.4	62.7		29 55.0 +17.4	63.2		36
37	26 44.9 +9.9	58.8		27 15.8 +10.9	59.2		27 46.3 +11.8	59.7		28 16.4 +12.8	60.1		28 46.1 +13.8	60.6		29 15.3 +14.8	61.1		2						

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $73^\circ$ ,  $287^\circ$

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	15 36.7 -24.4	96.8	15 29.5 -25.5	97.1	15 21.9 -26.4	97.4	15 14.1 -27.4	97.6	15 06.0 -28.3	97.9	14 57.6 -29.2	98.2	14 49.0 -30.2	98.4	14 40.0 -31.1	98.7	14 34.5 -31.9	102.2	12 02.6 -32.0	103.1	5	0			
1	15 12.3 -24.7	97.8	15 04.0 -25.6	98.0	14 55.5 -26.6	98.3	14 46.7 -27.6	98.6	14 37.7 -28.6	98.8	14 28.4 -29.5	99.1	14 18.8 -30.4	99.3	14 08.9 -31.3	99.6	14 08.9 -31.3	99.6	14 08.9 -31.3	100.5	12 02.6 -32.0	103.1	1		
2	14 47.6 -24.9	98.7	14 38.4 -25.9	99.0	14 28.9 -26.9	99.2	14 19.1 -27.8	99.5	14 09.1 -28.7	99.7	13 58.9 -29.7	100.0	13 48.4 -30.6	100.2	13 37.6 -31.5	100.5	13 37.6 -31.5	100.5	13 37.6 -31.5	100.5	12 02.6 -32.0	103.1	2		
3	14 22.7 -25.2	99.6	14 12.5 -26.1	99.9	14 02.0 -27.0	100.1	13 51.3 -28.0	100.4	13 40.4 -28.9	100.6	13 29.2 -29.8	100.9	13 17.8 -30.8	101.1	13 06.1 -31.6	101.3	13 06.1 -31.6	101.3	13 06.1 -31.6	101.3	12 02.6 -32.0	103.1	3		
4	13 57.5 -25.4	100.6	13 46.4 -26.4	100.8	13 35.0 -27.3	101.1	13 23.3 -28.2	101.3	13 11.5 -29.1	101.5	12 59.4 -30.1	101.8	12 47.0 -30.9	102.0	12 34.5 -31.9	102.2	12 34.5 -31.9	102.2	12 34.5 -31.9	102.2	12 02.6 -32.0	103.1	4		
5	13 32.1 -25.5	101.5	13 20.0 -26.5	101.7	13 07.7 -27.4	102.0	12 55.1 -28.3	102.2	12 42.4 -29.4	102.4	12 29.3 -30.2	102.6	12 16.1 -31.2	102.9	12 02.6 -32.0	103.1	12 02.6 -32.0	103.1	12 02.6 -32.0	103.1	12 02.6 -32.0	103.1	5		
6	13 06.6 -25.8	102.4	12 53.5 -26.7	102.7	12 40.3 -27.7	102.9	12 26.8 -28.6	103.1	12 13.0 -29.4	103.3	11 59.1 -30.4	103.5	11 45.0 -31.3	103.7	11 30.6 -32.1	103.9	11 30.6 -32.1	103.9	11 30.6 -32.1	103.9	11 30.6 -32.1	103.9	6		
7	12 40.8 -26.0	103.4	12 26.8 -26.9	103.6	12 12.6 -27.8	103.8	11 58.2 -28.7	104.0	11 43.6 -29.7	104.2	11 28.7 -30.5	104.4	11 13.7 -31.4	104.6	10 58.5 -32.3	104.8	10 58.5 -32.3	104.8	10 58.5 -32.3	104.8	10 58.5 -32.3	104.8	7		
8	12 14.8 -26.1	104.3	11 59.9 -27.1	104.5	11 44.8 -28.0	104.7	11 29.5 -28.9	104.9	11 13.9 -29.8	105.1	10 58.2 -30.7	105.3	10 42.3 -31.6	105.5	10 26.2 -32.4	105.6	10 26.2 -32.4	105.6	10 26.2 -32.4	105.6	10 26.2 -32.4	105.6	8		
9	11 48.7 -26.3	105.2	11 32.8 -27.2	105.4	11 16.8 -28.2	105.6	11 00.6 -29.1	105.8	10 44.1 -29.9	106.0	10 27.5 -30.8	106.2	10 10.7 -31.7	106.3	9 53.8 -32.6	106.5	9 53.8 -32.6	106.5	9 53.8 -32.6	106.5	9 53.8 -32.6	106.5	9		
10	11 22.4 -26.5	106.1	11 05.6 -27.4	106.3	10 48.6 -28.3	106.5	10 31.5 -29.2	106.7	10 14.2 -30.1	106.9	9 56.7 -31.0	107.0	9 39.0 -31.8	107.2	9 21.2 -32.6	107.4	9 21.2 -32.6	107.4	9 21.2 -32.6	107.4	9 21.2 -32.6	107.4	10		
11	10 55.9 -26.7	107.0	10 38.2 -27.6	107.2	10 20.3 -28.4	107.4	10 02.3 -29.3	107.6	9 44.1 -30.2	107.7	9 25.7 -31.0	107.9	9 07.2 -31.9	108.1	8 48.6 -32.8	108.2	8 48.6 -32.8	108.2	8 48.6 -32.8	108.2	8 48.6 -32.8	108.2	11		
12	10 29.2 -26.8	108.0	10 10.6 -27.7	108.1	9 51.9 -28.6	108.3	9 33.0 -29.5	108.5	9 13.9 -30.4	108.6	8 54.7 -31.3	108.8	8 35.3 -32.1	108.9	8 15.8 -32.9	109.1	8 15.8 -32.9	109.1	8 15.8 -32.9	109.1	8 15.8 -32.9	109.1	12		
13	10 02.4 -27.0	108.9	9 42.9 -27.8	109.0	9 23.3 -28.8	109.2	9 03.5 -29.6	109.3	8 43.5 -30.4	109.5	8 23.4 -31.3	109.6	8 03.2 -32.1	109.8	7 42.9 -33.0	109.9	7 42.9 -33.0	109.9	7 42.9 -33.0	109.9	7 42.9 -33.0	109.9	13		
14	9 35.4 -27.1	109.8	9 15.1 -28.0	109.9	8 54.5 -28.8	110.1	8 33.9 -29.7	110.2	8 13.1 -30.6	110.4	7 52.1 -31.4	110.5	7 31.1 -32.3	110.6	7 09.9 -33.1	110.7	7 09.9 -33.1	110.7	7 09.9 -33.1	110.7	7 09.9 -33.1	110.7	14		
15	9 08.3 -27.2	110.7	8 47.1 -28.1	110.8	8 25.7 -29.0	111.0	8 04.2 -29.9	111.1	7 42.5 -30.7	111.2	7 20.7 -31.5	111.4	6 58.8 -32.4	111.5	6 36.8 -33.2	111.6	6 36.8 -33.2	111.6	6 36.8 -33.2	111.6	6 36.8 -33.2	111.6	15		
16	8 41.1 -27.4	111.6	8 19.0 -28.3	111.7	7 56.7 -29.1	111.8	7 34.3 -29.9	112.0	7 11.8 -30.8	112.1	6 49.2 -31.6	112.2	6 26.4 -32.4	112.3	6 03.6 -33.2	112.4	6 03.6 -33.2	112.4	6 03.6 -33.2	112.4	6 03.6 -33.2	112.4	16		
17	8 13.7 -27.4	112.5	7 50.7 -28.3	112.6	7 27.6 -29.2	112.7	7 04.4 -30.1	112.8	6 41.0 -30.9	113.0	6 17.6 -31.7	113.1	5 54.0 -32.5	113.2	5 30.4 -33.4	113.3	5 30.4 -33.4	113.3	5 30.4 -33.4	113.3	5 30.4 -33.4	113.3	17		
18	7 46.3 -27.6	113.4	7 22.4 -28.4	113.5	6 58.4 -29.3	113.6	6 34.3 -30.1	113.7	6 10.1 -30.9	113.8	5 45.9 -31.8	113.9	5 21.5 -32.6	114.0	4 57.0 -33.3	114.1	4 57.0 -33.3	114.1	4 57.0 -33.3	114.1	4 57.0 -33.3	114.1	18		
19	7 18.7 -27.7	114.3	6 54.0 -28.6	114.4	6 29.1 -29.4	114.5	6 04.2 -30.2	114.6	5 39.2 -31.0	114.7	5 14.1 -31.8	114.8	4 48.9 -32.6	114.9	4 23.7 -33.5	114.9	4 23.7 -33.5	114.9	4 23.7 -33.5	114.9	4 23.7 -33.5	114.9	19		
20	6 51.0 -27.8	115.2	6 25.4 -28.6	115.3	5 59.7 -29.4	115.4	5 34.0 -30.3	115.5	5 08.2 -31.1	115.5	4 42.3 -32.0	115.6	4 16.3 -32.7	115.7	3 50.2 -33.5	115.8	3 50.2 -33.5	115.8	3 50.2 -33.5	115.8	3 50.2 -33.5	115.8	20		
21	6 23.2 -27.9	116.1	5 56.8 -28.8	116.2	5 30.3 -29.6	116.2	5 03.7 -30.4	116.3	4 37.1 -31.2	116.4	4 10.3 -31.9	116.5	3 43.6 -32.8	116.5	3 16.7 -33.5	116.6	3 16.7 -33.5	116.6	3 16.7 -33.5	116.6	3 16.7 -33.5	116.6	21		
22	5 55.3 -28.0	116.9	5 28.0 -28.8	117.0	5 00.7 -29.6	117.1	4 33.3 -30.4	117.2	4 05.9 -31.2	117.3	3 38.4 -32.0	117.3	3 10.8 -32.6	117.4	2 43.2 -33.5	117.4	2 43.2 -33.5	117.4	2 43.2 -33.5	117.4	2 43.2 -33.5	117.4	22		
23	5 27.3 -28.1	117.8	4 59.2 -28.8	117.9	4 31.1 -29.7	118.0	4 02.9 -30.4	118.1	3 34.7 -31.3	118.1	3 06.4 -32.1	118.2	2 38.0 -32.8	118.2	2 09.7 -33.6	118.2	2 09.7 -33.6	118.2	2 09.7 -33.6	118.2	2 09.7 -33.6	118.2	23		
24	4 59.2 -28.1	118.7	4 30.4 -29.0	118.8	4 01.4 -29.7	118.9	3 32.5 -30.6	118.9	3 03.4 -31.3	119.0	2 34.3 -32.0	119.0	2 05.2 -32.8	119.0	1 36.1 -33.6	119.1	1 36.1 -33.6	119.1	1 36.1 -33.6	119.1	1 36.1 -33.6	119.1	24		
25	4 31.1 -28.2	119.6	4 01.4 -28.9	119.7	3 31.7 -29.8	119.7	3 01.9 -30.5	119.8	2 32.1 -31.3	119.8	2 02.3 -32.2	119.9	1 32.4 -32.9	119.9	1 02.5 -33.7	119.9	1 02.5 -33.7	119.9	1 02.5 -33.7	119.9	1 02.5 -33.7	119.9	25		
26	4 02.9 -28.2	120.5	3 32.5 -29.1	120.6	3 01.9 -29.8	120.6	2 31.4 -30.6	120.6	2 00.8 -31.4	120.7	1 30.1 -32.1	120.7	0 59.5 -32.9	120.7	0 28.8 -33.6	120.7	0 28.8 -33.6	120.7	0 28.8 -33.6	120.7	0 28.8 -33.6	120.7	26		
27	3 34.7 -28.3	121.4	3 03.4 -29.1	121.4	2 32.1 -29.8	121.5	2 00.8 -30.7	121.6	1 29.4 -30.7	121.7	0 58.0 -32.1	121.7	0 26.0 -32.2	121.8	0 06.3 +32.8	57.6	0 06.3 +32.8	57.6	0 06.3 +32.8	57.6	0 06.3 +32.8	57.6	27		
28	3 06.4 -28.4	122.3	2 34.3 -29.1	122.3	2 02.3 -29.9	122.3	1 30.5 -30.6	122.4	0 57.2 +30.7	122.4	0 06.3 +32.9	122.4	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	28		
29	2 38.0 -28.3	123.1	2 05.2 -29.1	123.2	1 32.4 -29.9	123.2	0 59.5 -30.7	123.2	0 26.6 -31.4	123.2	0 06.3 +32.1	123.2	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	0 39.1 +33.6	56.8	29		
30	2 09.7 -28.5	124.0	1 36.1 -29.2	124.1	1 02.5 -30.0	124.1	0 28.8 -30.6	124.1	0 04.8 +31.4	55.9	0 38.4 +32.1	55.9	1 12.0 +32.9	55.9	1 45.6 +33.6	56.0	1 45.6 +33.6	56.0	1 45.6 +33.6	56.0	1 45.6 +33.6	56.0	30		
31	1 41.2 -28.4	124.9	1 06.9 -29.2	124.9	0 32.5 -29.9	124.9	0 26.0 -30.6	124.9	1 07.8 +30.7	55.1	1 10.5 +32.2	55.1	1 44.9 +32.8	55.1	2 19.2 +33.6	55.1	2 19.2 +33.6	55.1	2 19.2 +33.6	55.1	2 19.2 +33.6	55.1			

74°, 286° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	14 41.9 +24.1	96.4		14 35.1 +25.1	96.7		14 28.0 +26.1	96.9		14 20.6 +27.1	97.2		14 13.0 +28.0	97.4		14 05.1 +29.0	97.7		13 57.0 +29.9	97.9		13 48.6 +30.8	98.2		0
1	15 06.0 +23.9	95.4		15 00.2 +24.8	95.7		14 54.1 +25.8	96.0		14 47.7 +26.8	96.2		14 41.0 +27.8	96.5		14 34.1 +28.7	96.8		14 26.9 +29.7	97.0		14 19.4 +30.6	97.3		1
2	15 29.9 +23.6	94.5		15 25.0 +24.7	94.8		15 19.9 +25.6	95.0		15 14.5 +26.6	95.3		15 08.8 +27.6	95.6		15 02.8 +28.5	95.9		14 56.6 +29.4	96.1		14 50.0 +30.4	96.4		2
3	15 53.5 +23.4	93.5		15 49.7 +24.4	93.8		15 45.5 +25.4	94.1		15 41.1 +26.3	94.4		15 36.4 +27.3	94.7		15 31.3 +28.3	94.9		15 26.0 +29.3	95.2		15 20.4 +30.2	95.5		3
4	16 16.9 +23.1	92.6		16 14.1 +24.1	92.9		16 10.9 +25.1	93.2		16 07.4 +26.1	93.5		16 03.7 +27.1	93.7		15 59.6 +28.1	94.0		15 55.3 +29.0	94.3		15 50.6 +29.9	94.6		4
5	16 40.0 +22.8	91.6		16 38.2 +23.9	91.9		16 36.0 +24.9	92.2		16 33.5 +25.8	92.5		16 30.8 +26.8	92.8		16 27.7 +27.8	93.1		16 24.3 +28.7	93.4		16 20.5 +29.8	93.7		5
6	17 02.9 +22.6	90.7		17 02.1 +23.6	91.0		17 00.9 +24.6	91.3		16 59.4 +25.6	91.6		16 57.6 +26.6	91.9		16 55.5 +27.5	92.2		16 53.0 +28.6	92.5		16 50.3 +29.5	92.8		6
7	17 25.5 +22.3	89.7		17 25.7 +23.3	90.0		17 25.5 +24.3	90.3		17 25.0 +25.3	90.6		17 24.2 +26.3	90.9		17 23.0 +27.3	91.3		17 21.6 +28.2	91.6		17 19.8 +29.2	91.9		7
8	17 47.8 +22.0	88.7		17 49.0 +23.0	89.0		17 49.8 +24.1	89.4		17 50.3 +25.1	89.7		17 50.5 +26.0	90.0		17 50.3 +27.1	90.3		17 49.8 +28.0	90.6		17 49.0 +29.0	91.0		8
9	18 09.8 +21.7	87.7		18 12.0 +22.7	88.1		18 13.9 +23.7	88.4		18 15.4 +24.7	88.7		18 16.5 +25.8	89.0		18 17.4 +26.7	89.4		18 17.8 +27.8	89.7		18 18.0 +28.7	90.0		9
10	18 31.5 +21.4	86.7		18 34.7 +22.5	87.1		18 37.6 +23.5	87.4		18 40.1 +24.5	87.8		18 42.3 +25.5	88.1		18 44.1 +26.5	88.4		18 45.6 +27.4	88.8		18 46.7 +28.4	89.1		10
11	18 52.9 +21.1	85.8		18 57.2 +22.1	86.1		19 01.1 +23.1	86.4		19 04.6 +24.2	86.8		19 07.8 +25.2	87.1		19 10.6 +26.2	87.5		19 13.0 +27.2	87.8		19 15.1 +28.2	88.2		11
12	19 14.0 +20.8	84.8		19 19.3 +21.8	85.1		19 24.2 +22.9	85.5		19 28.8 +23.8	85.8		19 33.0 +24.8	86.2		19 36.8 +25.8	86.5		19 40.2 +26.9	86.9		19 43.3 +27.9	87.2		12
13	19 34.8 +20.4	83.8		19 41.1 +21.5	84.1		19 47.1 +22.5	84.5		19 52.6 +23.6	84.8		19 57.8 +24.6	85.2		20 02.6 +25.6	85.6		20 07.1 +26.6	85.9		20 11.2 +27.5	86.3		13
14	19 55.2 +20.1	82.8		20 02.6 +21.1	83.1		20 09.6 +22.1	83.5		20 16.2 +23.2	83.9		20 22.4 +24.2	84.2		20 28.2 +25.3	84.6		20 33.7 +26.2	85.0		20 38.7 +27.3	85.4		14
15	20 15.3 +19.8	81.8		20 23.7 +20.8	82.1		20 31.7 +21.9	82.5		20 39.4 +22.8	82.9		20 46.6 +23.9	83.3		20 53.5 +24.9	83.6		20 59.9 +25.9	84.0		21 06.0 +26.9	84.4		15
16	20 35.1 +19.4	80.8		20 44.5 +20.5	81.1		20 53.6 +21.5	81.5		21 02.2 +22.6	81.9		21 10.5 +23.6	82.3		21 18.4 +24.5	82.7		21 25.8 +25.6	83.1		21 32.9 +26.6	83.4		16
17	20 54.5 +19.1	79.8		21 05.0 +20.1	80.1		21 15.1 +21.1	80.5		21 24.8 +22.1	80.9		21 34.1 +23.2	81.3		21 42.9 +24.3	81.7		21 51.4 +25.3	82.1		21 59.5 +26.2	82.5		17
18	21 13.6 +18.7	78.7		21 25.1 +19.7	79.1		21 36.2 +20.8	79.5		21 46.9 +21.8	79.9		21 57.3 +22.8	80.3		22 07.2 +23.8	80.7		22 16.7 +24.8	81.1		22 25.7 +25.9	81.5		18
19	21 32.3 +18.3	77.7		21 44.8 +19.4	78.1		21 57.0 +20.4	78.5		22 08.7 +21.5	78.9		22 20.1 +22.5	79.3		22 31.0 +23.5	79.7		22 41.5 +24.6	80.1		22 51.6 +25.6	80.5		19
20	21 50.6 +17.9	76.7		22 04.2 +19.0	77.1		22 17.4 +20.0	77.5		22 30.2 +21.0	77.9		22 42.6 +22.1	78.3		22 54.5 +23.2	78.7		23 06.1 +24.1	79.1		23 17.2 +25.1	79.5		20
21	22 08.5 +17.5	75.7		22 23.2 +18.5	76.1		22 37.4 +19.6	76.5		22 51.2 +20.7	76.9		23 04.7 +21.7	77.3		23 17.7 +22.7	77.7		23 30.2 +23.8	78.1		23 42.3 +24.8	78.6		21
22	22 26.0 +17.2	74.6		22 41.7 +18.2	75.0		22 57.0 +19.3	75.4		23 11.9 +20.3	75.9		23 26.4 +21.3	76.3		23 40.4 +22.3	76.7		23 54.0 +23.4	77.1		24 07.1 +24.4	77.6		22
23	22 43.2 +16.7	73.6		22 59.9 +17.8	74.0		23 16.3 +18.8	74.4		23 32.2 +19.9	74.8		23 47.7 +20.9	75.3		24 02.7 +22.0	75.7		24 17.4 +22.9	76.1		24 31.5 +24.0	76.6		23
24	22 59.9 +16.4	72.6		23 17.7 +17.4	73.0		23 35.1 +18.4	73.4		23 52.1 +19.4	73.8		24 08.6 +20.5	74.2		24 24.7 +21.5	74.7		24 40.3 +22.6	75.1		24 55.5 +23.6	75.5		24
25	23 16.3 +15.9	71.5		23 35.1 +17.0	71.9		23 53.5 +18.0	72.3		24 11.5 +19.0	72.8		24 29.1 +20.0	73.2		24 46.2 +21.1	73.6		25 02.9 +22.1	74.1		25 19.1 +23.2	74.5		25
26	23 32.2 +15.5	70.5		23 52.1 +16.5	70.9		24 11.5 +17.6	71.3		24 30.5 +18.6	71.7		24 49.1 +19.7	72.2		25 07.3 +20.7	72.6		25 25.0 +21.7	73.1		25 42.3 +22.7	73.5		26
27	23 47.7 +15.0	69.4		24 08.6 +16.1	69.8		24 29.1 +17.1	70.2		24 49.1 +18.2	70.7		25 08.8 +19.2	71.1		25 28.0 +20.2	71.6		25 46.7 +21.3	72.0		26 05.0 +22.3	72.5		27
28	24 02.7 +14.7	68.3		24 24.7 +15.6	68.8		24 46.2 +16.7	69.2		25 07.3 +17.7	69.6		25 28.0 +18.7	70.1		25 48.2 +19.8	70.5		26 08.0 +20.8	71.0		26 27.3 +21.9	71.4		28
29	24 17.4 +14.1	67.3		24 40.3 +15.2	67.7		25 02.9 +16.2	68.1		25 25.0 +17.3	68.6		25 46.7 +18.3	69.0		26 08.0 +19.3	69.5		26 28.8 +20.4	69.9		26 49.2 +21.4	70.4		29
30	24 31.5 +13.8	66.2		24 55.5 +14.8	66.6		25 19.1 +15.8	67.1		25 42.3 +16.8	67.5		26 05.0 +17.9	68.0		26 27.3 +18.9	68.4		26 49.2 +19.9	68.9		27 10.6 +20.9	69.4		30
31	24 45.3 +13.2	65.1		25 10.3 +14.3	65.6		25 34.9 +15.3	66.0		25 59.1 +16.3	66.4		26 22.9 +17.3	66.9		26 46.2 +18.4	67.3		27 09.1 +19.4	67.8		27 31.5 +20.4	68.3		31
32	24 58.5 +12.8	64.1		25 24.6 +13.8	64.5		25 50.2 +14.8	64.9		26 15.4 +15.9	65.4		26 40.2 +16.9	65.8		27 04.6 +17.9	66.3		27 28.5 +18.9	66.8		27 51.9 +20.0	67.2		32
33	25 11.3 +12.3	63.0		25 38.4 +13.3	63.4		26 05.0 +14.4	63.8		26 31.3 +15.3	64.3		26 57.1 +16.4	64.7		27 22.5 +17.4	65.2		27 47.4 +18.4	65.7		28 11.9 +19.4	66.2		33
34	25 23.6 +11.9	61.9		25 51.7 +12.9	62.3		26 19.4 +13.8	62.8		26 49.4 +15.8	63.1		29 04.1 +16.9	63.5		30 16.1 +18.8	63.9		30 53.0 +11.7	64.6		30 55.1 +19.0	65.1		34
35	25 35.5 +11.4	60.8		26 04.6 +12.3	61.2		26 33.2 +13.4	61.7		27 01.5 +14.4	62.1		27 29.3 +15.4	62.6		27 56.8 +16.3	63.0		28 23.7 +17.4	63.5		28 50.3 +18.4	64.0		35
36	25 46.9 +10.8	59.7		26 16.9 +11.9	60.2		26 46.6 +12.8	60.6		27 15.9 +13.8	61.0		27 44.7 +14.9	61.5		28 13.1 +15.9	62.0		28 41.1 +16.9	62.4		29 08.7 +17.8	62.9		36
37	25 57.7 +10.4	58.6		26 28.8 +11.4	59.1		26 59.4 +12.4	59.5		27 29.7 +13.3	59.9		27 59.6 +14.3	60.4		28 29.0 +15.3	60.9								

**LATITUDE CONTRARY NAME TO DECLINATION**      **L.H.A. 74°, 286°**

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	14 41.9 -24.4	96.4	14 35.1 -25.4	96.7	14 28.0 -26.3	96.9	14 20.6 -27.2	97.2	14 13.0 -28.2	97.4	14 05.1 -29.1	97.7	13 57.0 -30.1	97.9	13 48.6 -31.0	98.2	13 48.6 -31.0	98.2	13 48.6 -31.0	98.2	13 48.6 -31.0	98.2	13 48.6 -31.0	98.2	0
1	14 17.5 -24.5	97.3	14 09.7 -25.5	97.6	14 01.7 -26.5	97.8	13 53.4 -27.5	98.1	13 44.8 -28.4	98.3	13 36.0 -29.3	98.6	13 26.9 -30.2	98.8	13 17.6 -31.1	99.0	13 17.6 -31.1	99.0	13 17.6 -31.1	99.0	13 17.6 -31.1	99.0	13 17.6 -31.1	99.0	1
2	13 53.0 -24.8	98.3	13 44.2 -25.8	98.5	13 35.2 -26.7	98.8	13 25.9 -27.6	99.0	13 16.4 -28.6	99.2	13 06.7 -29.6	99.5	12 56.7 -30.4	99.7	12 46.5 -31.4	99.9	12 46.5 -31.4	99.9	12 46.5 -31.4	99.9	12 46.5 -31.4	99.9	12 46.5 -31.4	99.9	2
3	13 28.2 -25.0	99.2	13 18.4 -25.9	99.4	13 08.5 -26.9	99.7	12 58.3 -27.9	99.9	12 47.8 -28.8	100.1	12 37.1 -29.6	100.4	12 26.3 -30.7	100.6	12 15.1 -31.5	100.8	12 15.1 -31.5	100.8	12 15.1 -31.5	100.8	12 15.1 -31.5	100.8	12 15.1 -31.5	100.8	3
4	13 03.2 -25.2	100.1	12 52.5 -26.2	100.4	12 41.6 -27.1	100.6	12 30.4 -28.0	100.8	12 19.0 -28.9	101.0	12 07.5 -29.9	101.2	11 55.6 -30.7	101.5	11 43.6 -31.6	101.7	11 43.6 -31.6	101.7	11 43.6 -31.6	101.7	11 43.6 -31.6	101.7	11 43.6 -31.6	101.7	4
5	12 38.0 -25.4	101.1	12 26.3 -26.1	101.3	12 14.5 -27.3	101.5	12 02.4 -28.2	101.7	11 50.1 -29.1	101.9	11 37.6 -30.0	102.1	11 24.9 -31.0	102.3	11 12.0 -31.9	102.5	11 12.0 -31.9	102.5	11 12.0 -31.9	102.5	11 12.0 -31.9	102.5	11 12.0 -31.9	102.5	5
6	12 12.6 -25.6	102.0	12 00.0 -26.5	102.2	11 47.2 -27.4	102.4	11 34.2 -28.4	102.6	11 21.0 -29.3	102.8	11 07.6 -30.2	103.0	10 53.9 -31.0	103.2	10 40.1 -31.9	103.4	10 40.1 -31.9	103.4	10 40.1 -31.9	103.4	10 40.1 -31.9	103.4	10 40.1 -31.9	103.4	6
7	11 47.0 -25.7	102.9	11 33.5 -26.7	103.1	11 19.8 -27.7	103.3	11 05.8 -28.5	103.5	10 51.7 -29.4	103.7	10 37.4 -30.4	103.9	10 22.9 -31.2	104.1	10 08.2 -32.1	104.3	10 08.2 -32.1	104.3	10 08.2 -32.1	104.3	10 08.2 -32.1	104.3	10 08.2 -32.1	104.3	7
8	11 21.3 -26.0	103.9	11 06.8 -26.3	104.0	10 52.1 -27.7	104.2	10 37.3 -28.7	104.4	10 22.3 -29.6	104.6	10 07.0 -30.4	104.8	9 51.7 -31.4	104.9	9 36.1 -32.2	105.1	9 36.1 -32.2	105.1	9 36.1 -32.2	105.1	9 36.1 -32.2	105.1	9 36.1 -32.2	105.1	8
9	10 55.3 -26.0	104.8	10 39.9 -27.0	105.0	10 24.4 -28.0	105.1	10 08.6 -28.8	105.3	9 52.7 -29.7	105.5	9 36.6 -30.6	105.6	9 20.3 -31.5	105.8	9 03.9 -32.3	106.0	9 03.9 -32.3	106.0	9 03.9 -32.3	106.0	9 03.9 -32.3	106.0	9 03.9 -32.3	106.0	9
10	10 29.3 -26.3	105.7	10 12.9 -27.1	105.9	9 56.4 -28.0	106.0	9 39.8 -29.0	106.2	9 23.0 -29.9	106.4	9 06.0 -30.7	106.5	8 48.8 -31.5	106.7	8 31.6 -32.5	106.8	8 31.6 -32.5	106.8	8 31.6 -32.5	106.8	8 31.6 -32.5	106.8	8 31.6 -32.5	106.8	10
11	10 03.0 -26.4	106.6	9 45.8 -27.3	106.8	9 28.4 -28.2	106.9	9 10.8 -29.1	107.1	8 53.1 -30.0	107.2	8 35.3 -30.9	107.4	8 17.3 -31.7	107.5	7 59.1 -32.5	107.7	7 59.1 -32.5	107.7	7 59.1 -32.5	107.7	7 59.1 -32.5	107.7	7 59.1 -32.5	107.7	11
12	9 36.6 -26.5	107.5	9 18.5 -27.5	107.7	9 00.2 -28.4	107.8	8 41.7 -29.2	108.0	8 23.1 -30.0	108.1	8 04.4 -30.9	108.3	7 45.6 -31.8	108.4	7 26.6 -32.7	108.5	7 26.6 -32.7	108.5	7 26.6 -32.7	108.5	7 26.6 -32.7	108.5	7 26.6 -32.7	108.5	12
13	9 10.1 -26.7	108.4	8 51.0 -27.5	108.6	8 31.8 -28.4	108.7	8 12.5 -29.3	108.9	7 53.1 -30.2	109.0	7 33.5 -31.1	109.1	7 13.8 -31.9	109.2	6 53.9 -32.7	109.4	6 53.9 -32.7	109.4	6 53.9 -32.7	109.4	6 53.9 -32.7	109.4	6 53.9 -32.7	109.4	13
14	8 43.4 -26.8	109.3	8 23.5 -27.7	109.5	8 03.4 -28.6	109.6	7 43.2 -29.4	109.7	7 22.9 -30.3	109.9	7 02.4 -31.1	110.0	6 41.9 -32.0	110.1	6 21.2 -32.8	110.2	6 21.2 -32.8	110.2	6 21.2 -32.8	110.2	6 21.2 -32.8	110.2	6 21.2 -32.8	110.2	14
15	8 16.6 -26.9	110.2	7 55.8 -27.8	110.4	7 34.8 -28.6	110.5	7 13.8 -29.6	110.6	6 52.6 -30.4	110.7	6 31.3 -31.3	110.8	6 09.9 -32.1	110.9	5 48.4 -32.9	111.0	5 48.4 -32.9	111.0	5 48.4 -32.9	111.0	5 48.4 -32.9	111.0	5 48.4 -32.9	111.0	15
16	7 49.7 -27.1	111.1	7 28.0 -27.9	111.3	7 06.2 -28.8	111.4	6 44.2 -29.6	111.5	6 22.2 -30.5	111.6	6 00.0 -31.3	111.7	5 37.8 -32.1	111.8	5 15.5 -33.0	111.9	5 15.5 -33.0	111.9	5 15.5 -33.0	111.9	5 15.5 -33.0	111.9	5 15.5 -33.0	111.9	16
17	7 22.6 -27.1	112.0	7 00.1 -28.1	112.2	6 37.4 -28.9	112.3	6 14.6 -29.7	112.4	5 51.7 -30.5	112.5	5 28.7 -31.4	112.6	5 05.7 -32.2	112.6	4 42.5 -33.0	112.7	4 42.5 -33.0	112.7	4 42.5 -33.0	112.7	4 42.5 -33.0	112.7	4 42.5 -33.0	112.7	17
18	6 55.5 -27.3	112.9	6 32.0 -28.1	113.0	6 08.5 -28.9	113.1	5 44.9 -29.8	113.2	5 21.2 -30.7	113.3	4 57.3 -31.4	113.4	4 33.5 -32.3	113.5	4 09.5 -33.1	113.6	4 09.5 -33.1	113.6	4 09.5 -33.1	113.6	4 09.5 -33.1	113.6	4 09.5 -33.1	113.6	18
19	6 28.2 -27.3	113.8	6 03.9 -28.2	113.9	5 39.6 -29.1	114.0	5 15.1 -29.9	114.1	4 50.5 -30.7	114.2	4 25.9 -31.5	114.3	4 01.2 -32.5	114.3	3 36.4 -33.1	114.4	3 36.4 -33.1	114.4	3 36.4 -33.1	114.4	3 36.4 -33.1	114.4	3 36.4 -33.1	114.4	19
20	6 00.9 -27.4	114.7	5 35.7 -28.2	114.8	5 10.5 -29.1	114.9	4 45.2 -29.9	115.0	4 19.8 -30.7	115.1	3 54.4 -31.6	115.1	3 28.9 -32.4	115.2	3 03.3 -33.1	115.2	3 03.3 -33.1	115.2	3 03.3 -33.1	115.2	3 03.3 -33.1	115.2	3 03.3 -33.1	115.2	20
21	5 33.5 -27.6	115.6	5 07.5 -28.4	115.7	4 41.4 -29.2	115.8	4 15.3 -30.0	115.9	3 49.1 -30.8	115.9	3 22.8 -31.6	116.0	2 56.5 -32.4	116.0	2 30.2 -33.2	116.1	2 30.2 -33.2	116.1	2 30.2 -33.2	116.1	2 30.2 -33.2	116.1	2 30.2 -33.2	116.1	21
22	5 05.9 -27.5	116.5	4 39.1 -28.4	116.6	4 12.2 -29.2	116.7	3 45.3 -30.1	116.7	3 18.3 -30.9	116.8	2 51.2 -31.6	116.8	2 24.1 -32.4	116.9	1 57.0 -33.2	116.9	1 57.0 -33.2	116.9	1 57.0 -33.2	116.9	1 57.0 -33.2	116.9	1 57.0 -33.2	116.9	22
23	4 38.4 -27.7	117.4	4 10.7 -28.5	117.5	3 43.0 -29.3	117.5	3 15.2 -30.1	117.6	2 47.4 -30.9	117.6	2 19.6 -31.7	117.7	1 51.7 -32.5	117.7	1 23.8 -33.3	117.7	1 23.8 -33.3	117.7	1 23.8 -33.3	117.7	1 23.8 -33.3	117.7	1 23.8 -33.3	117.7	23
24	4 10.7 -27.7	118.3	3 42.2 -28.5	118.4	3 13.7 -29.3	118.4	2 44.4 -29.4	118.5	2 15.0 -30.1	119.3	1 45.6 -30.9	119.4	1 16.2 -31.7	119.4	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	24
25	3 43.0 -27.8	119.2	3 13.7 -28.6	119.2	2 44.8 -28.6	119.3	2 15.0 -30.1	119.3	1 45.6 -30.9	119.4	1 16.2 -31.7	119.4	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	0 43.7 -32.0	119.5	25
26	3 15.2 -27.8	120.1	2 16.5 -28.6	120.1	1 45.6 -29.4	120.1	1 14.7 -30.2	120.2	0 43.7 -30.9	121.1	0 12.8 -31.8	121.1	0 12.8 -31.8	121.1	0 19.0 +31.7	121.1	0 19.0 +31.7	121.1	0 19.0 +31.7	121.1	0 19.0 +31.7	121.1	0 19.0 +31.7	121.1	26
27	2 47.4 -27.8	121.0	2 16.5 -28.6	121.0	1 45.6 -29.4	121.0	1 14.7 -30.2	121.1	0 43.7 -30.9	121.1	0 12.8 -31.8	121.1	0 12.8 -31.8	121.1	0 50.7 +31.7	121.2	0 50.7 +31.7	121.2	0 50.7 +31.7	121.2	0 50.7 +31.7	121.2	0 50.7 +31.7	121.2	27
28	2 19.6 -27.9	121.8	1 47.9 -28.7	121.9	1 16.2 -29.4	121.9	0 44.5 -30.2	121.9	0 12.8 -30.2	121.9	0 12.8 -30.2	121.9	0 12.8 -30.2	121.9	0 19.0 +31.7	122.0	0 19.0 +31.7	122.0	0 19.0 +31.7	122.0	0 19.0 +31.7	122.0	0 19.0 +31.7	122.0	28
29	1 51.7 -27.9	122.7	1 19.2 -28.7	122.8	0 46.8 -29.5	122.8	0 14.3 -30.6	122.8	0 18.2 +31.0	122.8	0 18.														

75°, 285° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	13 47.0 +24.0	96.0		13 40.6 +25.0	96.2		13 34.0 +26.0	96.5		13 27.1 +26.9	96.7		13 20.0 +27.9	96.9		13 12.6 +28.8	97.2		13 05.0 +29.8	97.4		12 57.2 +30.6	97.6		0
1	14 11.0 +23.8	95.0		14 05.6 +24.8	95.3		14 00.0 +25.7	95.5		13 54.0 +26.8	95.8		13 47.9 +27.7	96.0		13 41.4 +28.7	96.3		13 34.8 +29.6	96.5		13 27.8 +30.6	96.7		1
2	14 34.8 +23.6	94.1		14 30.4 +24.6	94.3		14 25.7 +25.6	94.6		14 20.8 +26.5	94.9		14 15.6 +27.5	95.1		14 10.1 +28.4	95.4		14 04.4 +29.3	95.6		13 58.4 +30.3	95.9		2
3	14 58.4 +23.3	93.1		14 55.0 +24.3	93.4		14 51.3 +25.3	93.7		14 47.3 +26.3	93.9		14 43.1 +27.2	94.2		14 38.5 +28.3	94.5		14 33.7 +29.2	94.7		14 28.7 +30.1	95.0		3
4	15 21.7 +23.1	92.2		15 19.3 +24.1	92.5		15 16.6 +25.1	92.7		15 13.6 +26.1	93.0		15 10.3 +27.1	93.3		15 06.8 +28.0	93.5		15 02.9 +29.0	93.8		14 58.8 +29.9	94.1		4
5	15 44.8 +22.9	91.2		15 43.4 +23.8	91.5		15 41.7 +24.8	91.8		15 39.7 +25.8	92.1		15 37.4 +26.8	92.3		15 34.8 +27.7	92.6		15 31.9 +28.7	92.9		15 28.7 +29.7	93.2		5
6	16 07.7 +22.6	90.3		16 07.2 +23.6	90.5		16 06.5 +24.6	90.8		16 05.5 +25.6	91.1		16 04.2 +26.5	91.4		16 02.5 +27.6	91.7		16 00.6 +28.5	92.0		15 58.4 +29.4	92.3		6
7	16 30.3 +22.3	89.3		16 30.8 +23.4	89.6		16 31.1 +24.3	89.9		16 31.1 +25.3	90.2		16 30.7 +26.3	90.5		16 30.1 +27.3	90.8		16 29.1 +28.3	91.1		16 27.8 +29.2	91.4		7
8	16 52.6 +22.0	88.3		16 54.2 +23.0	88.6		16 55.4 +24.1	88.9		16 56.4 +25.1	89.2		16 57.0 +26.1	89.5		16 57.4 +27.0	89.8		16 57.4 +28.0	90.2		16 57.0 +29.0	90.5		8
9	17 14.6 +21.8	87.4		17 17.2 +22.8	87.7		17 19.5 +23.8	88.0		17 21.5 +24.8	88.3		17 23.1 +25.8	88.6		17 24.4 +26.8	88.9		17 25.4 +27.7	89.2		17 26.0 +28.7	89.5		9
10	17 36.4 +21.4	86.4		17 40.0 +22.5	86.7		17 43.3 +23.5	87.0		17 46.3 +24.5	87.3		17 48.9 +25.5	87.7		17 51.2 +26.5	88.0		17 53.1 +27.5	88.3		17 54.7 +28.5	88.6		10
11	17 57.8 +21.2	85.4		18 02.5 +22.2	85.7		18 06.8 +23.2	86.0		18 10.8 +24.2	86.4		18 14.4 +25.2	86.7		18 17.7 +26.2	87.0		18 20.6 +27.2	87.4		18 23.2 +28.2	87.7		11
12	18 19.0 +20.9	84.4		18 24.7 +21.9	84.7		18 30.0 +22.9	85.1		18 35.0 +23.9	85.4		18 39.6 +25.0	85.7		18 43.9 +25.9	86.1		18 47.8 +27.0	86.4		18 51.4 +27.9	86.8		12
13	18 39.9 +20.6	83.4		18 46.6 +21.6	83.8		18 52.9 +22.7	84.1		18 58.9 +23.7	84.4		19 04.6 +24.6	84.8		19 09.8 +25.7	85.1		19 14.8 +26.6	85.5		19 19.3 +27.6	85.8		13
14	19 00.5 +20.2	82.4		19 08.2 +21.3	82.8		19 15.6 +22.3	83.1		19 22.6 +23.3	83.5		19 29.2 +24.3	83.8		19 35.5 +25.3	84.2		19 41.4 +26.3	84.5		19 46.9 +27.4	84.9		14
15	19 20.7 +19.9	81.4		19 29.5 +20.9	81.8		19 37.9 +21.9	82.1		19 45.9 +23.0	82.5		19 53.5 +24.0	82.8		20 00.8 +25.0	83.2		20 07.7 +26.1	83.6		20 14.3 +27.0	83.9		15
16	19 40.6 +19.6	80.4		19 50.4 +20.6	80.8		19 59.8 +21.7	81.1		20 08.9 +22.6	81.5		20 17.5 +23.7	81.9		20 25.8 +24.7	82.2		20 33.8 +25.7	82.6		20 41.3 +26.7	83.0		16
17	20 00.2 +19.2	79.4		20 11.0 +20.3	79.8		20 21.5 +21.3	80.2		20 31.5 +22.4	80.5		20 41.2 +23.4	80.9		20 50.5 +24.4	81.3		20 59.5 +25.3	81.6		21 08.0 +26.4	82.0		17
18	20 19.4 +18.9	78.4		20 31.3 +19.9	78.8		20 42.8 +20.9	79.2		20 53.9 +22.0	79.5		21 04.6 +23.0	79.9		21 14.9 +24.0	80.3		21 24.8 +25.1	80.7		21 34.4 +26.0	81.1		18
19	20 38.3 +18.6	77.4		20 51.2 +19.6	77.8		21 03.7 +20.6	78.1		21 15.9 +21.6	78.5		21 27.6 +22.7	78.9		21 38.9 +23.7	79.3		21 49.9 +24.7	79.7		22 00.4 +25.7	80.1		19
20	20 56.9 +18.1	76.4		21 10.8 +19.2	76.8		21 24.3 +20.3	77.1		21 37.5 +21.3	77.5		21 50.3 +22.2	77.9		22 02.6 +23.3	78.3		22 14.6 +24.3	78.7		22 26.1 +25.3	79.1		20
21	21 15.0 +17.8	75.4		21 30.0 +18.8	75.7		21 44.6 +19.8	76.1		21 58.8 +20.8	76.5		22 12.5 +22.0	76.9		22 25.9 +23.0	77.3		22 38.9 +24.0	77.7		22 51.4 +25.0	78.1		21
22	21 32.8 +17.5	74.3		21 48.8 +18.5	74.7		22 04.4 +19.5	75.1		22 19.7 +20.5	75.5		22 34.5 +21.5	75.9		22 48.9 +22.5	76.3		23 02.9 +23.6	76.7		23 16.4 +24.6	77.1		22
23	21 50.3 +17.0	73.3		22 07.3 +18.1	73.7		22 23.9 +19.1	74.1		22 40.2 +20.1	74.5		22 56.0 +21.2	74.9		23 11.4 +22.2	75.3		23 26.5 +23.2	75.7		23 41.0 +24.3	76.1		23
24	22 07.3 +16.6	72.3		22 25.4 +17.6	72.7		22 43.0 +18.7	73.1		23 00.3 +19.8	73.5		23 17.2 +20.7	73.9		23 33.6 +21.8	74.3		23 49.7 +22.8	74.7		24 05.3 +23.8	75.1		24
25	22 23.9 +16.3	71.2		22 43.0 +17.3	71.6		23 01.7 +18.4	72.0		23 20.1 +19.3	72.4		23 37.9 +20.4	72.9		23 55.4 +21.4	73.3		24 12.5 +22.4	73.7		24 29.1 +23.4	74.1		25
26	22 40.2 +15.8	70.2		23 00.3 +16.9	70.6		23 20.1 +17.8	71.0		23 39.4 +18.9	71.4		23 58.3 +20.0	71.8		24 16.8 +21.0	72.3		24 34.9 +22.0	72.7		24 52.5 +23.0	73.1		26
27	22 56.0 +15.4	69.1		23 17.2 +16.4	69.5		23 37.9 +17.5	70.0		23 58.3 +18.5	70.4		24 18.3 +19.5	70.8		24 37.8 +20.5	71.2		24 56.9 +21.5	71.7		25 15.5 +22.6	72.1		27
28	23 11.4 +15.1	68.1		23 33.6 +16.1	68.5		23 55.4 +17.1	68.9		24 16.8 +18.1	69.3		24 37.8 +19.1	69.8		24 58.3 +20.1	70.2		25 18.4 +21.2	70.6		25 38.1 +22.2	71.1		28
29	23 26.5 +14.5	67.0		23 49.7 +15.6	67.4		24 12.5 +16.6	67.9		24 34.9 +17.6	68.3		24 56.9 +18.6	68.7		25 18.4 +19.7	69.1		25 39.6 +20.7	69.6		26 00.3 +21.7	70.0		29
30	24 41.0 +14.2	66.0		24 05.3 +15.1	66.4		24 29.1 +16.2	66.8		24 52.5 +17.2	67.2		25 15.5 +18.2	67.7		25 38.1 +19.3	68.1		26 00.3 +20.2	68.6		26 22.0 +21.3	69.0		30
31	25 55.2 +13.7	64.9		24 20.4 +14.7	65.3		24 45.3 +15.3	65.7		25 09.7 +16.7	66.2		25 33.7 +17.8	66.6		25 57.4 +18.7	67.0		26 20.5 +19.8	67.5		26 43.3 +20.8	68.0		31
32	24 08.9 +13.3	63.9		24 35.1 +14.3	64.3		25 01.0 +15.3	64.7		25 26.4 +16.3	65.1		25 51.5 +17.3	65.5		26 16.1 +18.3	66.0		26 40.3 +19.3	66.4		27 04.1 +20.3	66.9		32
33	24 22.2 +12.8	62.8		24 49.4 +13.8	63.2		25 16.3 +14.8	63.6		25 42.7 +15.8	64.0		26 08.8 +16.8	64.5		26 34.4 +17.8	64.9		26 59.6 +18.9	65.4		27 24.4 +19.8	65.9		33
34	24 35.0 +12.3	61.7		25 03.2 +13.4	62.1		25 31.1 +14.3	62.5		25 58.5 +15.4	63.0		26 25.0 +16.3	63.4		26 52.2 +17.4	63.9		27 18.5 +18.3	64.3		27 44.2 +19.4	64.8		34
35	24 47.3 +11.9	60.6		25 16.6 +12.8	61.0		25 45.4 +13.9	61.5		26 13.9 +14.8	61.9		26 41.9 +15.9	62.3		27 09.6 +16.8	62.8		27 36.8 +17.9	63.2		28 03.6 +18.9	63.7		35
36	24 59.2 +11.4	59.6		25 29.4 +12.4	60.0		25 59.3 +13.3	60.4		26 28.7 +14.4	60.8		26 57.8 +15.3	61.3		27 26.4 +16.4	61.7		27 54.7 +17.3	62.2		28 22.5 +18.3	62.6		36
37	25 10.6 +11.0	58.5		25 18.8 +11.9	58.9		26 12.6 +12.9	59.3		26 43.1 +13.8	59.7		27 13.1 +14.9	60.2		27 42.8 +15.8	60.6								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $75^\circ$ ,  $285^\circ$

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	13 47.0 -24.3	96.0	13 40.6 -25.2	96.2	13 34.0 -26.2	96.5	13 27.1 -27.1	96.7	13 20.0 -28.1	96.9	13 12.6 -29.0	97.2	13 05.0 -30.0	97.4	12 57.2 -30.9	97.6	12 26.3 -31.1	98.5	12 23.5 -31.1	98.3	12 20.5 -30.1	98.3	12 17.7 -31.1	98.5	0
1	13 22.7 -24.4	96.9	13 15.4 -25.4	97.2	13 07.8 -26.4	97.4	13 00.0 -27.4	97.6	12 51.9 -28.3	97.8	12 43.6 -29.2	98.1	12 35.0 -30.1	98.3	12 26.3 -31.1	98.5	12 23.5 -31.1	98.3	12 20.5 -30.1	98.3	12 17.7 -31.1	98.5	1		
2	12 58.3 -24.7	97.9	12 50.0 -25.7	98.1	12 41.4 -26.6	98.3	12 32.6 -27.5	98.5	12 23.6 -28.4	98.7	12 14.4 -29.4	99.0	12 04.9 -30.3	99.2	11 55.2 -28.7	99.6	11 45.0 -29.6	99.9	11 34.6 -30.4	100.1	11 24.0 -31.3	100.3	11 19.6 -31.3	100.3	2
3	12 33.6 -24.8	98.8	12 24.3 -25.8	99.0	12 14.8 -26.7	99.2	12 05.1 -27.7	99.4	11 55.2 -28.7	99.6	11 45.0 -29.6	99.9	11 34.6 -30.4	100.1	11 24.0 -31.3	100.3	11 19.6 -31.3	100.3	11 15.2 -31.5	100.1	11 12.7 -31.5	100.1	3		
4	12 08.8 -25.1	99.7	11 58.5 -26.0	99.9	11 48.1 -27.0	100.1	11 37.4 -27.9	100.3	11 26.5 -28.8	100.5	11 15.4 -29.7	100.7	11 04.2 -30.6	100.9	10 52.7 -31.5	101.1	10 21.2 -31.7	102.0	10 10.5 -32.3	102.0	10 1.5 -32.3	102.0	4		
5	11 43.7 -25.2	100.7	11 32.5 -26.1	100.9	11 21.1 -27.1	101.1	11 09.5 -28.0	101.2	10 57.7 -28.9	101.4	10 45.7 -29.8	101.6	10 33.6 -30.4	101.8	10 21.2 -31.7	102.0	10 10.5 -32.3	102.0	10 1.5 -32.3	102.0	10 0.5 -32.3	102.0	5		
6	11 18.5 -25.4	101.6	11 06.4 -26.3	101.8	10 54.0 -27.2	102.0	10 41.5 -28.2	102.1	10 28.8 -29.1	102.3	10 15.9 -30.0	102.5	10 02.8 -30.9	102.7	9 49.5 -31.7	102.9	9 17.8 -31.9	103.7	9 1.5 -32.1	103.7	9 0.5 -32.1	103.7	6		
7	10 53.1 -25.5	102.5	10 40.1 -26.5	102.7	10 26.8 -27.4	102.9	10 13.3 -28.3	103.0	9 59.7 -29.2	103.2	9 45.9 -30.1	103.4	9 31.9 -31.0	103.6	9 17.8 -31.9	103.7	9 1.5 -32.1	103.7	9 0.5 -32.1	103.7	7				
8	10 27.6 -25.7	103.4	10 13.6 -26.7	103.6	9 59.4 -27.6	103.8	9 45.0 -28.5	103.9	9 30.5 -29.4	104.1	9 15.8 -30.3	104.3	9 0.9 -31.1	104.4	8 45.9 -32.0	104.6	8 11.5 -32.1	104.6	8 0.5 -32.1	104.6	8				
9	10 01.9 -25.9	104.3	9 46.9 -26.7	104.5	9 31.8 -27.7	104.7	9 16.5 -28.6	104.8	9 0.1 -29.5	105.0	8 45.5 -30.4	105.1	8 29.8 -31.3	105.3	8 13.9 -32.1	105.4	8 1.5 -32.1	105.4	8 0.5 -32.1	105.4	9				
10	9 36.0 -26.0	105.3	9 20.2 -27.0	105.4	9 04.1 -27.8	105.6	8 47.9 -28.7	105.7	8 31.6 -29.6	105.9	8 15.1 -30.5	106.0	7 58.5 -31.4	106.1	7 41.8 -32.3	106.3	7 16.2 -32.8	106.3	7 1.5 -32.8	106.3	7 0.5 -32.8	106.3	10		
11	9 10.0 -26.1	106.2	8 53.2 -27.0	106.3	8 36.3 -28.0	106.5	8 19.2 -28.8	106.6	8 0.2 -29.7	106.7	7 44.6 -30.6	106.9	7 27.1 -31.4	107.0	7 0.9 -32.3	107.1	7 1.5 -32.3	107.1	7 0.5 -32.3	107.1	11				
12	8 43.9 -26.3	107.1	8 26.2 -27.2	107.2	8 0.8 -28.0	107.4	7 50.4 -29.0	107.5	7 32.3 -29.9	107.6	7 14.0 -30.7	107.7	6 55.7 -31.6	107.9	6 37.2 -32.4	108.0	6 10.4 -32.5	108.8	6 1.5 -32.5	108.8	6				
13	8 17.6 -26.4	108.0	7 59.0 -27.3	108.1	7 40.3 -28.2	108.3	7 21.4 -29.0	108.4	7 0.2 -29.9	108.5	6 43.3 -30.7	108.6	6 24.1 -31.6	108.7	6 0.4 -32.5	108.8	6 1.5 -32.5	108.8	6 0.5 -32.5	108.8	13				
14	7 51.2 -26.5	108.9	7 31.7 -27.4	109.0	7 12.1 -28.3	109.1	6 52.4 -29.2	109.3	6 32.5 -30.0	109.4	6 12.6 -30.9	109.5	5 52.5 -31.7	109.6	5 32.3 -32.5	109.7	5 12.7 -32.5	109.7	5 1.5 -32.5	109.7	14				
15	7 24.7 -26.6	109.8	7 04.3 -27.5	109.9	6 43.8 -28.4	110.0	6 23.2 -29.2	110.1	6 0.2 -30.1	110.2	5 41.7 -31.0	110.3	5 20.8 -31.8	110.4	4 59.8 -32.6	110.5	4 14.3 -32.9	110.5	4 1.5 -32.9	110.5	15				
16	6 58.1 -26.7	110.7	6 36.8 -27.6	110.8	6 15.4 -28.4	110.9	5 54.0 -29.4	111.0	5 32.4 -30.2	111.1	5 10.7 -31.0	111.2	4 49.0 -31.8	111.3	4 27.2 -32.7	111.4	4 10.5 -32.8	111.4	4 1.5 -32.8	111.4	16				
17	6 31.4 -26.9	111.6	6 09.2 -27.7	111.7	5 47.0 -28.6	111.8	5 24.6 -29.4	111.9	5 02.2 -30.2	112.0	4 39.7 -31.1	112.1	4 17.2 -32.0	112.1	3 54.5 -32.7	112.2	3 12.8 -32.8	112.2	3 1.5 -32.8	112.2	17				
18	6 04.5 -26.9	112.5	5 41.5 -27.7	112.6	5 18.4 -28.6	112.7	4 55.2 -29.4	112.8	4 32.0 -30.3	112.8	4 0.8 -31.1	112.9	3 45.2 -31.9	113.0	3 21.8 -32.8	113.0	3 0.5 -32.8	113.0	3 0.5 -32.8	113.0	18				
19	5 37.6 -27.0	113.4	5 13.8 -27.8	113.5	4 49.8 -28.7	113.6	4 25.8 -29.6	113.6	4 0.1 -30.4	113.7	3 37.5 -31.2	113.8	3 13.3 -32.0	113.8	2 49.0 -32.8	113.9	2 10.5 -32.8	113.9	2 1.5 -32.8	113.9	19				
20	5 10.6 -27.0	114.3	4 45.9 -27.9	114.4	4 21.1 -28.7	114.5	3 56.2 -29.5	114.5	3 31.3 -30.4	114.6	3 0.6 -31.2	114.6	2 41.3 -32.0	114.7	2 16.2 -32.8	114.7	2 1.5 -32.8	114.7	2 0.5 -32.8	114.7	20				
21	4 43.6 -27.2	115.2	4 18.0 -28.0	115.3	3 52.4 -28.9	115.3	3 26.7 -29.7	115.4	3 0.0 -30.5	115.4	2 35.1 -31.3	115.5	2 0.9 -32.1	115.5	1 43.4 -32.9	115.6	1 10.5 -32.8	115.6	1 1.5 -32.8	115.6	21				
22	4 16.4 -27.2	116.1	3 50.0 -28.0	116.2	3 23.5 -28.8	116.2	2 57.0 -29.7	116.3	2 30.4 -30.4	116.3	2 0.3 -31.2	116.3	1 37.2 -32.1	116.4	1 10.5 -32.8	116.4	1 1.5 -32.8	116.4	1 0.5 -32.8	116.4	22				
23	3 49.2 -27.2	117.0	3 22.0 -28.1	117.0	3 24.7 -28.9	117.1	2 27.3 -29.7	117.1	2 0.0 -30.5	117.2	1 32.6 -31.4	117.2	1 0.5 -32.1	117.2	0 37.7 -32.9	117.2	0 10.4 -32.9	117.2	0 1.5 -32.9	117.2	23				
24	3 22.0 -27.3	117.9	2 53.9 -28.1	117.9	2 25.8 -28.9	118.0	1 57.6 -29.7	118.0	1 0.5 -30.9	118.0	0 33.0 -31.3	118.1	0 10.2 -32.1	118.1	0 0.4 -32.9	118.1	0 1.5 -32.9	118.1	0 0.5 -32.9	118.1	24				
25	2 54.7 -27.4	118.8	2 25.8 -28.2	118.8	1 56.9 -29.0	118.8	1 27.9 -29.8	118.9	0 58.9 -30.5	118.9	0 29.9 -31.3	118.9	0 0.9 -32.1	118.9	0 28.1 +32.8	61.1	0 10.9 +32.9	60.3	0 1.5 +32.8	60.3	0 0.5 +32.8	60.3	25		
26	2 27.3 -27.3	119.7	1 57.6 -28.1	119.7	1 27.9 -29.0	119.7	0 58.1 -29.7	119.7	0 28.4 -30.6	119.8	0 0.1 +34.3	120.2	0 31.2 +32.1	120.3	1 0.9 +32.9	120.3	1 1.5 +32.8	120.3	1 0.5 +32.8	120.3	1 0.5 +32.8	120.3	26		
27	2 0.0 -27.4	120.6	1 29.5 -28.3	120.6	0 58.9 -29.0	120.6	0 28.4 -29.8	120.6	0 0.2 +30.5	120.6	0 32.7 +31.3	120.5	1 0.3 +32.1	120.5	1 33.8 +32.8	59.4	1 0.5 +32.8	59.4	1 1.5 +32.8	59.4	1 0.5 +32.8	59.4	27		
28	1 32.6 -27.5	121.4	1 0.1 -28.2	121.5	0 29.9 -29.0	121.5	0 0.0 -29.9	121.5	0 0.1 +29.8	121.5	0 31.2 +30.5	121.5	1 0.4 +32.1	121.5	1 35.4 +32.8	58.6	2 0.6 +32.8	58.6	2 1.5 +32.8	58.6	2 0.5 +32.8	58.6	28		
29	1 05.1 -27.4	122.3	0 33.0 -28.2	122.3	0 0.0 -29.9	122.3	0 0.0 -29.9	122.3	0 0.1 +29.7	122.3	0 31.2 +30.5	122.3	1 0.3 +30.5	122.3	1 37.4 +32.8	57.7	2 39.4 +32.8	57.7	2 1.5 +32.8	57.7	2 0.5 +32.8	57.7	29		
30	0 37.7 -27.5	123.2	0 0.4 -28.2	123.2	0 28.1 +29.0	55.9	1 00.9 +29.8	56.8	1 33.8 +30.5	56.8	2 0.6 +31.3	56.8	2 39.4 +32.0	56.9	3 12.2 +32.8	56.9	3 12.2 +32.8	56.9	3 12.2 +32.8	56.9	30				
31	0 10.2 -27.4	124.1	0 23.4 +28.2	55.9	0 57.1 +28.9	55.9	1 30.7 +29.7	55.9	2 0.4 +30.5	55.9	2 37.9 +31.2	56.0	3 11.4 +32.0	56.0	3 45.0 +32.6	56.1	4 17.6 +32.7	55.5	4 22.8 +32.5	53.5	5 22.8 +32.5	53.5	34		
32	0 17.2 +27.5	55.0	0 51.6 +28.3	55.0	1 26.0 +29.0	55.0	2 0.0 +29.7	55.1	2 34.8 +30.4	55.1	3 0.9 +31.1	55.1	3 43.4 +31.9	55.2	4 17.6 +32.7	55.2	5 55.3 +32.5	52.7	5 55.3 +32.5	52.7	5 55.3 +32.5	52.7	35		
33	0 44.7 +27.4	54.1	1 19.9 +28.1	54.1	1 55.0 +28.9	54.1	2 30.1 +29.7	54.2	3 05.2 +30.4	54.2	3 40.3 +31.1	54.3	4 15.3 +31.9	54.3	4 50.3 +32.5	54.4	3 33.8 +32.8	59.4							

76°, 284° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°											
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.								
0	12	52.0	+24.0	95.6	12	46.1	+24.9	95.8	12	39.9	+25.9	96.0	12	33.5	+26.9	96.2	12	26.9	+27.8	96.5	12	20.0	+28.8	96.7	12	12.9	+29.7	96.9	12	05.6	+30.6	97.1	0
1	13	16.0	+23.7	94.6	13	11.0	+24.7	94.9	13	05.8	+25.7	95.1	13	00.4	+26.6	95.3	12	54.7	+27.6	95.5	12	48.8	+28.5	95.8	12	42.6	+29.5	96.0	12	36.2	+30.4	96.2	1
2	13	39.7	+23.5	93.7	13	35.7	+24.5	93.9	13	31.5	+25.5	94.2	13	27.0	+26.5	94.4	13	22.3	+27.4	94.6	13	17.3	+28.4	94.9	13	12.1	+29.3	95.1	13	06.6	+30.3	95.3	2
3	14	03.2	+23.3	92.7	14	00.2	+24.3	93.0	13	57.0	+25.3	93.2	13	53.5	+26.2	93.5	13	49.7	+27.2	93.7	13	45.7	+28.2	94.0	13	41.4	+29.1	94.2	13	36.9	+30.0	94.5	3
4	14	26.5	+23.1	91.8	14	24.5	+24.1	92.0	14	22.3	+25.0	92.3	14	19.7	+26.1	92.5	14	16.9	+27.0	92.8	14	13.9	+27.9	93.1	14	10.5	+28.9	93.3	14	06.9	+29.9	93.6	4
5	14	49.6	+22.8	90.8	14	48.6	+23.8	91.1	14	47.3	+24.8	91.4	14	45.8	+25.8	91.6	14	43.9	+26.8	91.9	14	41.8	+27.8	92.1	14	39.4	+28.7	92.4	14	36.8	+29.6	92.7	5
6	15	12.4	+22.6	89.9	15	12.4	+23.6	90.1	15	12.1	+24.6	90.4	15	11.6	+25.5	90.7	15	10.7	+26.6	91.0	15	09.6	+27.5	91.2	15	08.1	+28.5	91.5	15	06.4	+29.5	91.8	6
7	15	35.0	+22.4	88.9	15	36.0	+23.4	89.2	15	36.7	+24.4	89.5	15	37.1	+25.4	89.7	15	37.3	+26.3	90.0	15	37.1	+27.3	90.3	15	36.6	+28.3	90.6	15	35.9	+29.2	90.9	7
8	15	57.4	+22.1	87.9	15	59.4	+23.1	88.2	16	01.1	+24.1	88.5	16	02.5	+25.1	88.8	16	03.6	+26.1	89.1	16	04.4	+27.0	89.4	16	04.9	+28.0	89.7	16	05.1	+29.0	90.0	8
9	16	19.5	+21.8	87.0	16	22.5	+22.8	87.3	16	25.2	+23.8	87.6	16	27.6	+24.8	87.9	16	29.7	+25.8	88.2	16	31.4	+26.8	88.4	16	32.9	+27.8	88.7	16	34.1	+28.7	89.0	9
10	16	41.3	+21.5	86.0	16	45.3	+22.6	86.3	16	49.0	+23.6	86.6	16	52.4	+24.6	86.9	16	55.5	+25.5	87.2	16	58.2	+26.6	87.5	17	00.7	+27.5	87.8	17	02.8	+28.5	88.1	10
11	17	02.8	+21.3	85.0	17	07.9	+22.2	85.3	17	12.6	+23.3	85.6	17	17.0	+24.3	86.0	17	21.0	+25.3	86.3	17	24.8	+26.3	86.6	17	28.2	+27.3	86.9	17	31.3	+28.2	87.2	11
12	17	24.1	+20.9	84.0	17	30.1	+22.0	84.4	17	35.9	+23.0	84.7	17	41.3	+24.0	85.0	17	46.3	+25.0	85.3	17	51.1	+26.0	85.6	17	55.5	+27.0	86.0	17	59.5	+28.0	86.3	12
13	17	45.0	+20.7	83.1	17	52.1	+21.7	83.4	17	58.9	+22.7	83.7	18	05.3	+23.7	84.0	18	11.3	+24.8	84.4	18	17.1	+25.7	84.7	18	22.5	+26.7	85.0	18	27.5	+27.7	85.3	13
14	18	05.7	+20.4	82.1	18	13.8	+21.4	82.4	18	21.6	+22.4	82.7	18	29.0	+23.4	83.1	18	36.1	+24.4	83.4	18	42.8	+25.4	83.7	18	49.2	+26.4	84.1	18	55.2	+27.4	84.4	14
15	18	26.1	+20.1	81.1	18	35.2	+21.1	81.4	18	44.0	+22.1	81.8	18	52.4	+23.2	82.1	19	00.5	+24.2	82.4	19	08.2	+25.2	82.8	19	15.6	+26.1	83.1	19	22.6	+27.1	83.5	15
16	18	46.2	+19.7	80.1	18	56.3	+20.8	80.4	19	06.1	+21.8	80.8	19	15.6	+22.8	81.1	19	24.7	+23.8	81.5	19	33.4	+24.8	81.8	19	41.7	+25.9	82.2	19	49.7	+26.9	82.5	16
17	19	05.9	+19.5	79.1	19	17.1	+20.5	79.4	19	27.9	+21.5	79.8	19	38.4	+22.5	80.1	19	48.5	+23.5	80.5	19	58.2	+24.5	80.8	20	07.6	+25.5	81.2	20	16.6	+26.5	81.6	17
18	19	25.4	+19.1	78.1	19	37.6	+20.1	78.4	19	49.4	+21.1	78.8	20	00.9	+22.1	79.1	20	12.0	+23.2	79.5	20	22.7	+24.2	79.9	20	33.1	+25.2	80.2	20	43.1	+26.2	80.6	18
19	19	44.5	+18.7	77.1	19	57.7	+19.8	77.4	20	10.5	+20.9	77.8	20	23.0	+21.9	78.2	20	35.2	+22.8	78.5	20	46.9	+23.9	78.9	20	58.3	+24.8	79.3	21	09.3	+25.8	79.6	19
20	20	03.2	+18.4	76.1	20	17.5	+19.4	76.4	20	31.4	+20.4	76.8	20	44.9	+21.5	77.2	20	58.0	+22.5	77.5	21	10.8	+23.5	77.9	21	23.1	+24.6	78.3	21	35.1	+25.5	78.7	20
21	20	21.6	+18.1	75.1	20	36.9	+19.1	75.4	20	51.8	+20.1	75.8	21	06.4	+21.1	76.2	21	20.5	+22.2	76.5	21	34.3	+23.1	76.9	21	47.7	+24.1	77.3	22	00.6	+25.2	77.7	21
22	20	39.7	+17.7	74.0	20	56.0	+18.7	74.4	21	11.9	+19.8	74.8	21	27.5	+20.8	75.2	21	42.7	+21.8	75.5	21	57.4	+22.8	75.9	22	11.8	+23.8	76.3	22	25.8	+24.8	76.7	22
23	20	57.4	+17.3	73.0	21	14.7	+18.4	73.4	21	31.7	+19.4	73.8	21	48.3	+20.4	74.2	22	04.5	+21.4	74.5	22	20.2	+22.5	74.9	22	35.6	+23.5	75.3	22	50.6	+24.5	75.7	23
24	21	14.7	+17.0	72.0	21	33.1	+18.0	72.4	21	51.1	+19.0	72.8	22	08.7	+20.0	73.1	22	25.9	+21.0	73.5	22	42.7	+22.0	73.9	22	59.1	+23.1	74.3	23	15.1	+24.1	74.7	24
25	21	31.7	+16.6	71.0	21	51.1	+17.6	71.3	22	10.1	+18.6	71.7	22	28.7	+19.6	72.1	22	46.9	+20.7	72.5	23	04.7	+21.7	72.9	23	22.2	+22.6	73.3	23	39.2	+23.6	73.7	25
26	21	48.3	+16.2	69.9	22	08.7	+17.2	70.3	22	28.7	+18.2	70.7	22	48.3	+19.3	71.1	23	07.6	+20.2	71.5	23	26.4	+21.3	71.9	23	44.8	+22.3	72.3	24	02.8	+23.3	72.7	26
27	22	04.5	+15.7	68.9	22	25.9	+16.8	69.3	22	46.9	+17.8	69.7	23	07.6	+18.8	70.1	23	27.8	+19.9	70.5	23	47.7	+20.8	70.9	24	07.1	+21.9	71.3	24	26.1	+22.9	71.7	27
28	22	20.2	+15.4	67.9	22	42.7	+16.4	68.2	23	04.7	+17.5	68.6	23	26.4	+18.4	69.0	23	47.7	+19.4	69.4	24	08.5	+20.5	69.9	24	29.0	+21.5	70.3	24	49.0	+22.5	70.7	28
29	22	35.6	+15.0	66.8	22	59.1	+16.0	67.2	23	22.2	+17.0	67.6	23	37.8	+16.8	68.2	24	07.1	+19.0	68.4	24	29.0	+20.0	68.8	24	50.5	+21.0	69.3	25	11.5	+22.0	69.7	29
30	22	50.6	+14.6	65.8	23	15.1	+15.6	66.1	23	39.2	+16.5	66.5	24	02.8	+17.6	66.9	24	26.1	+18.6	67.4	24	49.0	+19.6	67.8	25	11.5	+20.6	68.2	25	33.5	+21.7	68.7	30
31	23	05.2	+14.2	64.7	23	30.7	+15.1	65.1	23	55.7	+16.2	65.5	24	20.4	+17.2	65.9	24	44.7	+18.2	66.3	25	08.6	+19.2	66.7	25	32.1	+20.2	67.2	25	55.2	+21.1	67.6	31
32	23	19.4	+13.7	63.6	23	45.8	+14.7	64.0	24	11.9	+15.7	64.4	24	37.6	+16.7	64.8	25	02.9	+17.9	65.3	25	27.8	+18.7	65.7	25	52.3	+19.7	66.1	26	16.3	+20.7	66.6	32
33	23	33.1	+13.3	62.6	24	00.5	+14.3	63.0	24	27.6	+15.3	63.4	24	54.3	+16.3	63.8	25	20.6	+17.2														

## LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $76^\circ$ ,  $284^\circ$

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z									
0	12	52.0	-24.1	95.6	12	46.1	-25.1	95.8	12	39.9	-26.1	96.0	12	33.5	-27.0	96.2	12	26.9	-28.0	96.5	12	20.0	-28.9	96.7	12	12.9	-29.8	96.9	12	05.6	-30.7	97.1	0
1	12	27.9	-24.4	96.5	12	21.0	-25.3	96.7	12	13.8	-26.2	96.9	12	06.5	-27.2	97.2	11	58.9	-28.2	97.4	11	51.1	-29.1	97.6	11	43.1	-30.0	97.8	11	34.9	-31.0	98.0	1
2	12	03.5	-24.5	97.4	11	55.7	-25.5	97.6	11	47.6	-26.5	97.9	11	39.3	-27.4	98.1	11	30.7	-28.3	98.3	11	22.0	-29.2	98.5	11	13.1	-30.2	98.7	11	03.9	-31.0	98.9	2
3	11	39.0	-24.7	98.4	11	30.2	-25.7	98.6	11	21.1	-26.6	98.8	11	11.9	-27.6	99.0	11	02.4	-28.5	99.2	10	52.8	-29.4	99.4	10	42.9	-30.3	99.5	10	32.9	-31.2	99.7	3
4	11	14.3	-24.9	99.3	11	04.5	-25.8	99.5	10	54.5	-26.8	99.7	10	44.3	-27.7	99.9	10	33.9	-28.6	100.1	10	23.4	-29.6	100.2	10	12.6	-30.5	100.4	10	01.7	-31.4	100.6	4
5	10	49.4	-25.0	100.2	10	38.7	-26.0	100.4	10	27.7	-26.9	100.6	10	16.6	-27.8	100.8	10	05.3	-28.8	101.0	9	53.8	-29.7	101.1	9	42.1	-30.5	101.3	9	30.3	-31.5	101.5	5
6	10	24.4	-25.2	101.2	10	12.7	-26.2	101.3	10	00.8	-27.1	101.5	9	48.8	-28.0	101.7	9	36.5	-28.9	101.8	9	24.1	-29.8	102.0	9	11.6	-30.8	102.2	8	58.8	-31.6	102.3	6
7	9	59.2	-25.4	102.1	9	46.5	-26.3	102.2	9	33.7	-27.2	102.4	9	20.8	-28.2	102.6	9	07.6	-29.0	102.7	8	54.3	-29.9	102.9	8	40.8	-30.8	103.0	8	27.2	-31.7	103.2	7
8	9	33.8	-25.5	103.0	9	20.2	-26.4	103.2	9	06.5	-27.3	103.3	8	52.6	-28.2	103.5	8	38.6	-29.2	103.6	8	24.4	-30.1	103.8	8	10.0	-30.9	103.9	7	55.5	-31.8	104.0	8
9	9	08.3	-25.6	103.9	8	53.8	-26.5	104.1	8	39.2	-27.5	104.2	8	24.4	-28.4	104.4	8	09.4	-29.3	104.5	7	54.3	-30.2	104.6	7	39.1	-31.1	104.8	9				
10	8	42.7	-25.8	104.8	8	27.3	-26.7	105.0	8	11.7	-27.6	105.1	7	56.0	-28.5	105.3	7	40.1	-29.4	105.4	7	24.1	-30.2	105.5	7	08.0	-31.1	105.6	6	51.8	-32.0	105.8	10
11	8	16.9	-25.8	105.7	8	0.0	-26.8	105.9	7	44.1	-27.7	106.0	7	27.5	-28.6	106.1	7	10.7	-29.5	106.3	6	53.9	-30.4	106.4	6	36.9	-31.2	106.5	6	19.8	-32.1	106.6	11
12	7	51.0	-26.0	106.7	7	33.8	-27.0	106.8	7	16.4	-27.8	106.9	6	58.9	-28.7	107.0	6	41.2	-29.5	107.1	6	23.5	-30.4	107.2	6	05.7	-31.3	107.4	12				
13	7	25.0	-26.1	107.6	7	0.6	-27.0	107.7	6	48.6	-27.9	107.8	6	30.2	-28.8	107.9	6	11.7	-29.7	108.0	5	53.1	-30.6	108.1	5	34.4	-31.4	108.2	13				
14	6	58.9	-26.2	108.5	6	39.8	-27.1	108.6	6	20.7	-28.0	108.7	6	01.4	-28.9	108.8	5	42.0	-29.7	108.9	5	22.5	-30.6	109.0	5	03.0	-31.5	109.1	14				
15	6	32.7	-26.4	109.4	6	12.7	-27.2	109.5	5	52.7	-28.1	109.6	5	32.5	-29.0	109.7	5	12.3	-29.9	109.8	4	51.9	-30.6	109.8	4	31.5	-31.5	109.9	15				
16	6	0.63	-26.4	110.3	5	45.5	-27.3	110.4	5	24.6	-28.2	110.5	5	03.5	-29.0	110.6	4	42.4	-29.8	110.6	4	21.3	-30.8	110.7	4	0.0	-30.5	110.8	16				
17	5	39.9	-26.5	111.2	5	18.2	-27.4	111.3	4	56.4	-28.2	111.4	3	44.5	-29.1	111.4	4	12.6	-30.0	111.5	3	50.5	-30.7	111.6	3	28.5	-31.7	111.6	17				
18	5	13.4	-26.5	112.1	4	50.8	-27.4	112.2	4	28.2	-28.3	112.2	3	0.5	-29.1	112.3	3	42.6	-30.0	112.4	3	19.8	-30.9	112.4	2	56.8	-31.6	112.5	18				
19	4	46.9	-26.7	113.0	4	23.4	-27.5	113.1	3	59.9	-28.4	113.1	3	36.3	-29.2	113.2	3	12.6	-30.0	113.2	2	48.9	-30.8	113.3	2	25.2	-31.7	113.3	19				
20	4	20.2	-26.7	113.9	3	55.9	-27.6	113.9	3	31.5	-28.4	114.0	3	0.7	-29.3	114.1	2	42.6	-30.1	114.1	2	18.1	-30.9	114.1	1	53.5	-31.7	114.2	20				
21	3	53.5	-26.8	114.8	3	28.3	-27.6	114.8	3	0.3	-28.4	114.9	2	37.8	-29.2	114.9	2	12.5	-30.1	115.0	1	47.2	-30.9	115.0	0	56.4	-32.5	115.0	21				
22	3	26.7	-26.8	115.7	3	0.0	-27.6	115.7	3	34.7	-28.5	115.8	2	0.8	-29.3	115.8	1	42.4	-30.1	115.8	0	50.1	-31.7	115.9	0	23.9	-32.5	115.9	22				
23	2	33.1	-26.8	116.7	2	0.54	-27.7	117.5	1	37.7	-28.6	117.5	1	0.9	-29.3	117.6	0	42.2	-30.2	117.6	0	14.4	-31.0	117.6	0	0.86	+32.6	63.3	23				
24	2	0.62	-26.9	118.4	1	37.7	-27.8	118.4	0	40.6	-29.5	118.4	0	12.0	-30.1	118.4	0	16.6	+30.9	61.6	0	45.1	+31.7	61.6	1	13.7	+32.5	61.6	24				
25	2	0.62	-26.9	118.4	1	0.91	-28.5	118.4	0	40.6	-28.6	119.3	0	11.2	-29.3	119.3	0	18.1	+30.2	60.7	0	47.5	+30.9	60.7	1	16.8	+31.8	60.7	25				
26	1	39.3	-27.0	119.3	1	0.9	-27.7	119.3	0	12.0	-28.6	120.2	0	18.1	+29.4	59.8	0	48.3	+30.1	59.8	1	18.4	+30.9	59.9	2	20.2	+31.7	59.9	26				
27	1	12.3	-27.0	120.1	0	42.2	-27.8	120.2	0	14.4	-27.8	121.0	0	16.6	+28.5	59.0	0	45.1	+28.6	58.1	1	21.6	+30.9	58.1	0	18.4	+31.8	58.1	27				
28	0	45.3	-26.9	121.0	0	13.4	-27.4	121.9	0	13.4	-27.4	121.9	0	16.6	+28.5	58.1	0	45.1	+28.6	58.1	1	18.4	+30.9	58.1	0	13.4	+31.7	58.1	28				
29	0	18.4	-27.0	121.9	0	0	13.4	+27.4	58.1	0	13.4	+27.4	58.1	0	16.6	+28.5	58.1	0	13.4	+29.1	62.4	0	41.2	+32.5	62.4	0	13.4	+32.5	62.4	29			
30	0	0.86	+27.0	57.2	0	41.2	+27.7	57.2	1	13.7	+28.5	57.2	1	46.2	+29.3	57.2	2	18.6	+30.1	57.2	2	51.1	+30.8	57.3	3	23.5	+31.6	57.3	3	55.9	+32.3	57.4	30
31	0	35.6	+27.0	56.3	1	0.89	+27.8	56.3	1	42.2	+28.5	56.3	2	15.5	+29.2	56.3	2	48.7	+30.0	56.4	3	21.9	+30.8	56.4	3	55.1	+31.5	56.5	31				
32	1	0.26	+26.9	55.4	1	36.7	+27.7	55.4	2	10.7	+28.5	55.4	2	44.7	+29.3	55.5	3	18.7	+30.0	55.5	3	52.7	+30.7	55.6	4	26.6	+31.5	55.6	32				
33	1	29.5	+27.0	54.5	2	0.44	+27.7	54.5	2	39.2	+28.4	54.6	3	14.0	+29.2	54.6	3	48.7	+29.9	54.6	4	23.4	+30.7	54.7	4	58.1	+31.3	54.8	33				
34	1	56.5	+26.9	53.6	2	32.1	+27.6	53.6	3	0.76	+28.4	53.7	3	43.2	+29.1	53.7	4	18.6	+29.9	53.8	5	29.4	+30.6	53.8	6	0.48	+32.0	54.0	34				
35	2	23.4	+26.9	52.7	2	59.7	+27.6	52.7	3	36.0	+28.4	52.8	4	12.3	+29.1	52.8	4	48.5	+29.8	52.9	5	24.7	+30.5	53.0	6	6.008	+31.2	53.1	35				
36	2	50.3	+26.8	51.8	3	27.3	+27.6	51.9	4	0.44	+28.3	51.9	4	41.4	+29.0	52.0	5	18.3	+29.7	52.0	5	55.2	+30.4	52.1	6	32.0	+31.2	52.2	36				
37	3	17.1	+26.8	50.9	3	54.9	+27.5	51.0	4	32.7	+28.2	51.0	5	10.4	+28.9	51.1	5	48.0	+29.7	51.2	7	0.32	+31.0	51.3	7	40.6	+31.8	51.4	37				
38	3	43.9	+26.7	50.0	4	22.4	+27.4	50.1	5	0.09	+28.1	50.1	5	39.3	+28.9	50.2	6	17.7	+29.6	50.3	6	56.0	+30.3	50.4	7	34.2	+31.0	50.5	38				
39	4	10.6	+26.7	49.1	4	49.8	+27.4	49.2	5	29.0	+28.1	49.2	6	0.82	+28.3	49.4	6	47.3	+29.4	49.4	7	26.3	+30.1	49.5	8	0.52	+30.8	49.6	39				
40	4	37.3	+26.6	48.2	5	17.2	+27.3	48.3	8	16.1	+27.4	48.3	8	37.0	+28.6	48.4	7	16.7	+29.4	48.5	7	56.4	+30.1	48.6	8	36.0	+30.8	48.7	40				
41	5	0.39	+26.5	47.3	5	44.5	+27.2	47.4	6	25.1	+27.9	47.5	7	0.56	+28.6	47.6	7	46.1	+29.2	47.7	8	26.5	+29.9	47.8	9	0.68	+30.6	47.9	41				
42	5	30.4	+26.4	46.4	6	11.7	+27.1	46.5	6	53.0	+27.8	46.6	7	34.2</																			

S. Lat. { L.H.A. greater than  $180^{\circ}$  ....Zn= $180^{\circ}-Z$   
           { L.H.A. less than  $180^{\circ}$ .....Zn= $180^{\circ}+Z$

# LATITUDE SAME NAME AS DECLINATION

L.H.A.  $104^\circ$ ,  $256^\circ$

77°, 283° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	11 57.0 +23.9	95.2		11 51.5 +24.9	95.4		11 45.8 +25.8	95.6		11 39.9 +26.8	95.8		11 33.7 +27.8	96.0		11 27.4 +28.6	96.2		11 20.8 +29.6	96.4		11 14.0 +30.5	96.6		0
1	12 20.9 +23.7	94.2		12 16.4 +24.6	94.4		12 11.6 +25.7	94.6		12 06.7 +26.5	94.9		12 01.5 +27.5	95.1		11 56.0 +28.5	95.3		11 50.4 +29.4	95.5		11 44.5 +30.4	95.7		1
2	12 44.6 +23.5	93.3		12 41.0 +24.5	93.5		12 37.3 +25.4	93.7		12 33.2 +26.4	93.9		12 29.0 +27.4	94.2		12 24.5 +28.3	94.4		12 19.8 +29.3	94.6		12 14.9 +30.2	94.8		2
3	13 08.1 +23.2	92.3		13 05.5 +24.3	92.6		13 02.7 +25.2	92.8		12 59.6 +26.3	93.0		12 56.4 +27.1	93.3		12 52.8 +28.2	93.5		12 49.1 +29.0	93.7		12 45.1 +30.0	93.9		3
4	13 31.3 +23.1	91.4		13 29.8 +24.0	91.6		13 27.9 +25.1	91.9		13 25.9 +26.0	92.1		13 23.5 +27.0	92.3		13 21.0 +27.9	92.6		13 18.1 +28.9	92.8		13 15.1 +29.8	93.0		4
5	13 54.4 +22.8	90.4		13 53.8 +23.8	90.7		13 53.0 +24.8	90.9		13 51.9 +25.7	91.2		13 50.5 +26.8	91.4		13 48.9 +27.7	91.7		13 47.0 +28.7	91.9		13 44.9 +29.6	92.2		5
6	14 17.2 +22.6	89.5		14 17.6 +23.6	89.7		14 17.8 +24.6	90.0		14 17.6 +25.6	90.2		14 17.3 +26.5	90.5		14 16.6 +27.5	90.8		14 15.7 +28.5	91.0		14 14.5 +29.4	91.3		6
7	14 39.8 +22.4	88.5		14 41.2 +23.4	88.8		14 42.4 +24.3	89.0		14 43.2 +25.4	89.3		14 43.8 +26.3	89.6		14 44.1 +27.3	89.8		14 44.2 +28.2	90.1		14 43.9 +29.2	90.4		7
8	15 02.2 +22.1	87.6		15 04.6 +23.1	87.8		15 06.7 +24.2	88.1		15 08.6 +25.1	88.4		15 10.1 +26.1	88.6		15 11.4 +27.1	88.9		15 12.4 +28.0	89.2		15 13.1 +29.0	89.5		8
9	15 24.3 +21.8	86.6		15 27.7 +22.9	86.9		15 30.9 +23.8	87.2		15 33.7 +24.9	87.4		15 36.2 +25.9	87.7		15 38.5 +26.8	88.0		15 40.4 +27.9	88.3		15 42.1 +28.8	88.5		9
10	15 46.2 +21.6	85.6		15 50.6 +22.6	85.9		15 54.7 +23.7	86.2		15 58.6 +24.6	86.5		16 02.1 +25.6	86.8		16 05.3 +26.6	87.1		16 08.3 +27.5	87.3		16 10.9 +28.5	87.6		10
11	16 07.8 +21.4	84.7		16 13.2 +22.4	85.0		16 18.4 +23.3	85.2		16 23.2 +24.4	85.5		16 27.7 +25.4	85.8		16 31.9 +26.4	86.1		16 35.8 +27.3	86.4		16 39.4 +28.3	86.7		11
12	16 29.2 +21.0	83.7		16 35.6 +22.1	84.0		16 41.7 +23.1	84.3		16 47.6 +24.1	84.6		16 53.1 +25.1	84.9		16 58.3 +26.0	85.2		17 03.1 +27.1	85.5		17 07.7 +28.0	85.8		12
13	16 50.2 +20.9	82.7		16 57.7 +21.8	83.0		17 04.8 +22.9	83.3		17 11.7 +23.8	83.6		17 18.2 +24.8	83.9		17 24.3 +25.9	84.2		17 30.2 +26.8	84.6		17 35.7 +27.8	84.9		13
14	17 11.1 +20.5	81.7		17 19.5 +21.6	82.0		17 27.7 +22.5	82.3		17 35.5 +23.6	82.7		17 43.0 +24.5	83.0		17 50.2 +25.5	83.3		17 57.0 +26.5	83.6		18 03.5 +27.5	83.9		14
15	17 31.6 +20.2	80.7		17 41.1 +21.2	81.1		17 50.2 +22.3	81.4		17 59.1 +23.2	81.7		18 07.5 +24.3	82.0		18 15.7 +25.3	82.3		18 23.5 +26.3	82.7		18 31.0 +27.2	83.0		15
16	17 51.8 +19.9	79.8		18 02.3 +20.9	80.1		18 12.5 +21.9	80.4		18 22.3 +23.0	80.7		18 31.8 +24.0	81.0		18 41.0 +24.9	81.4		18 49.8 +25.9	81.7		18 58.2 +27.0	82.1		16
17	18 11.7 +19.6	78.8		18 23.2 +20.7	79.1		18 34.4 +21.7	79.4		18 45.3 +22.6	79.8		18 55.8 +23.7	80.1		19 05.9 +24.7	80.4		19 15.7 +25.7	80.8		19 25.2 +26.6	81.1		17
18	18 31.3 +19.4	77.8		18 43.9 +20.3	78.1		18 56.1 +21.3	78.4		19 07.9 +22.4	78.8		19 19.5 +23.3	79.1		19 30.6 +24.4	79.5		19 41.4 +25.4	79.8		19 51.8 +26.4	80.2		18
19	18 50.7 +18.9	76.8		19 04.2 +20.0	77.1		19 17.4 +21.1	77.4		19 30.3 +22.0	77.8		19 42.8 +23.1	78.1		19 55.0 +24.0	78.5		20 06.8 +25.0	78.8		20 18.2 +26.0	79.2		19
20	19 09.6 +18.7	75.8		19 24.2 +19.7	76.1		19 38.5 +20.6	76.5		19 52.3 +21.7	76.8		20 05.9 +22.7	77.2		20 19.0 +23.7	77.5		20 31.8 +24.7	77.9		20 44.2 +25.7	78.2		20
21	19 28.3 +18.3	74.8		19 43.9 +19.3	75.1		19 59.1 +20.4	75.5		20 14.0 +21.4	75.8		20 28.6 +22.3	76.2		20 42.7 +23.4	76.5		20 56.5 +24.4	76.9		21 09.9 +25.4	77.3		21
22	19 46.6 +18.0	73.7		20 03.2 +19.0	74.1		20 19.5 +20.0	74.5		20 35.4 +21.0	74.8		20 50.9 +22.1	75.2		21 06.1 +23.0	75.5		21 20.9 +24.0	75.9		21 35.3 +25.0	76.3		22
23	20 04.6 +17.6	72.7		20 22.2 +18.7	73.1		20 39.5 +19.7	73.4		20 56.4 +20.7	73.8		21 13.0 +21.6	74.2		21 29.1 +22.7	74.6		21 44.9 +23.7	74.9		22 00.3 +24.7	75.3		23
24	20 22.2 +17.3	71.7		20 40.9 +18.3	72.1		20 59.2 +19.3	72.4		21 17.1 +20.3	72.8		21 34.6 +21.4	73.2		21 51.8 +22.3	73.6		22 08.6 +23.3	73.9		22 25.0 +24.3	74.3		24
25	20 39.5 +16.9	70.7		20 59.2 +17.9	71.1		21 18.5 +18.9	71.4		21 37.4 +19.9	71.8		21 56.0 +20.9	72.2		22 14.1 +22.0	72.6		22 31.9 +23.0	73.0		22 49.3 +24.0	73.4		25
26	20 56.4 +16.6	69.7		21 17.1 +17.5	70.0		21 37.4 +18.6	70.4		21 57.3 +19.6	70.8		22 16.9 +20.6	71.2		22 36.1 +21.6	71.6		22 54.9 +22.6	72.0		23 13.3 +23.5	72.4		26
27	21 13.0 +16.1	68.6		21 34.6 +17.2	69.0		21 56.0 +18.1	69.4		22 16.9 +19.2	69.8		22 37.5 +20.2	70.1		22 57.7 +21.2	70.5		23 17.5 +22.1	70.9		23 36.8 +23.2	71.4		27
28	21 29.1 +15.8	67.6		21 51.8 +16.8	68.0		22 14.1 +17.8	68.3		22 36.1 +18.8	68.7		22 57.7 +19.8	69.1		23 18.9 +20.7	69.5		23 39.6 +21.8	69.9		24 00.0 +22.8	70.3		28
29	21 44.9 +15.4	66.6		22 08.6 +16.4	66.9		22 31.9 +17.4	67.3		22 54.9 +18.4	67.7		23 17.5 +19.3	68.1		23 39.6 +20.4	68.5		24 01.4 +21.4	68.9		24 22.8 +22.4	69.3		29
30	22 00.3 +15.0	65.5		22 25.0 +16.0	65.9		22 49.3 +17.0	66.3		23 13.3 +18.0	66.7		23 36.8 +19.0	67.1		24 00.0 +20.0	67.5		24 22.8 +21.0	67.9		24 45.2 +22.0	68.3		30
31	22 15.3 +14.6	64.5		22 41.0 +15.6	64.9		23 06.3 +16.6	65.2		23 31.3 +17.5	65.6		23 55.8 +18.6	66.0		24 20.0 +19.6	66.4		24 43.8 +20.5	66.9		25 07.2 +21.5	67.3		31
32	22 29.9 +14.2	63.4		22 56.6 +15.1	63.8		23 22.9 +16.1	64.2		23 48.8 +17.2	64.6		24 14.8 +18.1	65.0		24 39.6 +19.1	65.4		25 04.3 +20.1	65.8		25 28.7 +21.1	66.3		32
33	22 44.1 +13.8	62.4		23 11.7 +14.8	62.8		23 39.0 +15.8	63.1		24 06.0 +16.7	63.5		24 32.5 +17.7	63.9		24 58.7 +18.7	64.4		25 24.4 +19.7	64.8		25 49.8 +20.7	65.2		33
34	22 57.9 +13.3	61.3		23 26.5 +14.3	61.7		23 54.8 +15.3	62.1		24 22.7 +16.2	62.5		24 50.2 +17.3	62.9		25 17.4 +18.2	63.3		25 44.1 +19.2	63.7		26 10.5 +20.2	64.2		34
35	23 11.2 +13.0	60.3		23 40.8 +13.9	60.6		24 10.1 +14.8	61.0		24 38.9 +15.9	61.4		25 07.5 +16.8	61.8		25 35.6 +17.8	62.3		26 03.3 +18.8	62.7		26 30.7 +19.7	63.1		35
36	23 24.2 +12.4	59.2		23 54.7 +13.5	59.6		24 24.9 +14.4	60.0		24 54.8 +15.3	60.4		25 24.3 +16.3	60.8		25 53.4 +17.3	61.2		26 22.1 +18.3	61.6		26 50.4 +19.3	62.1		36
37	23 36.6 +12.1	58.1		24 08.2 +13.0	58.5		24 39.3 +14.0	58.9		25 10.1 +15.0	59.3		25 40.6 +15.9	59.7		26 10.7 +16.8	60.1								

## LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $77^{\circ}$ ,  $283^{\circ}$

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z									
0	11	57.0	-24.0	95.2	11	51.5	-25.0	95.4	11	45.8	-26.0	95.6	11	39.9	-27.0	95.8	11	33.7	-27.9	96.0	11	27.4	-28.8	96.2	11	20.8	-29.7	96.4	11	14.0	-30.6	96.6	0
1	11	33.0	-24.3	96.1	11	26.5	-25.2	96.3	11	19.8	-26.1	96.5	11	12.9	-27.1	96.7	11	05.8	-28.0	96.9	10	58.6	-29.0	97.1	10	51.1	-29.9	97.3	10	43.4	-30.8	97.5	1
2	11	08.7	-24.4	97.0	11	01.3	-25.4	97.2	10	53.7	-26.4	97.4	10	45.8	-27.2	97.6	10	37.8	-28.2	97.8	10	29.6	-29.1	98.0	10	21.2	-30.1	98.2	10	12.6	-31.0	98.3	2
3	10	44.3	-24.5	98.0	10	35.9	-25.5	98.1	10	27.3	-26.4	98.3	10	18.6	-27.4	98.5	10	09.6	-28.3	98.7	10	00.5	-29.3	98.9	9	51.1	-30.2	99.0	9	41.6	-31.1	99.2	3
4	10	19.8	-24.5	98.9	10	10.4	-25.7	99.1	10	00.9	-26.7	99.2	9	51.2	-27.6	99.4	9	41.3	-28.5	99.6	9	31.2	-29.4	99.7	9	20.9	-30.3	99.9	9	10.5	-31.2	100.1	4
5	9	55.0	-24.8	99.8	9	44.7	-25.8	100.0	9	34.2	-26.7	100.1	9	23.6	-27.7	100.3	9	12.8	-28.6	100.5	9	01.8	-29.5	100.6	8	50.6	-30.4	100.8	8	39.3	-31.3	100.9	5
6	9	30.2	-25.1	100.7	9	18.9	-26.0	100.9	9	07.5	-26.9	101.1	8	55.9	-27.8	101.2	8	44.2	-28.8	101.4	8	32.3	-29.7	101.5	8	20.2	-30.5	101.7	8	08.0	-31.4	101.8	6
7	9	05.1	-25.1	101.7	8	52.9	-26.1	101.8	8	40.6	-27.1	102.0	8	28.1	-28.0	102.1	8	15.4	-28.8	102.2	8	02.6	-29.7	102.4	7	49.7	-30.7	102.5	7	36.6	-31.5	102.7	7
8	8	40.0	-25.2	102.6	8	26.8	-26.2	102.7	8	13.5	-27.1	102.9	8	00.1	-28.0	103.0	7	46.6	-29.0	103.1	7	32.9	-29.9	103.3	7	05.1	-31.7	103.5	8				
9	8	14.7	-25.4	103.5	8	00.6	-26.3	103.6	7	46.4	-27.3	103.8	7	32.1	-28.2	103.9	7	17.6	-29.1	104.0	7	03.0	-30.0	104.1	6	48.3	-30.9	104.3	9				
10	7	49.2	-25.5	104.4	7	34.3	-26.5	104.5	7	19.1	-27.3	104.7	7	03.9	-28.3	104.8	6	48.5	-29.1	104.9	6	33.0	-30.0	105.0	6	17.4	-30.9	105.1	6	01.7	-31.8	105.2	10
11	7	23.7	-25.7	105.3	7	07.8	-26.6	105.4	6	51.8	-27.5	105.6	6	35.6	-28.4	105.7	6	19.4	-29.3	105.8	6	03.0	-30.1	105.9	5	46.5	-31.0	106.0	5	29.9	-31.8	106.1	11
12	6	58.0	-25.7	106.2	6	41.2	-26.6	106.3	6	24.3	-27.6	106.5	6	07.2	-28.4	106.6	5	50.1	-29.3	106.7	5	32.9	-30.3	106.8	5	15.5	-31.1	106.9	6				
13	6	32.3	-25.9	107.1	6	14.6	-26.8	107.2	5	56.7	-27.6	107.3	5	38.8	-28.5	107.4	5	20.8	-29.4	107.5	5	02.6	-30.2	107.6	4	44.4	-31.1	107.7	4	26.2	-32.0	107.8	13
14	6	06.4	-25.8	108.0	5	47.8	-26.8	108.1	5	29.1	-27.8	108.2	5	10.3	-28.7	108.3	4	51.4	-29.5	108.4	4	32.4	-30.4	108.5	4	13.3	-31.2	108.6	14				
15	5	40.5	-26.0	108.9	5	21.0	-27.0	109.0	5	01.3	-27.8	109.1	4	41.6	-28.6	109.2	4	21.9	-29.6	109.3	4	02.0	-30.4	109.4	3	42.1	-31.2	109.5	15				
16	5	14.5	-26.1	109.9	4	54.0	-26.9	110.9	4	33.5	-27.8	110.0	4	13.0	-28.8	110.1	3	52.3	-29.6	110.2	3	31.6	-30.4	110.2	3	10.3	-31.3	110.3	16				
17	4	48.4	-26.2	110.8	4	27.1	-27.1	110.8	4	05.7	-27.9	110.9	3	44.2	-28.7	111.0	3	22.7	-29.6	111.0	3	01.2	-30.5	111.1	2	39.6	-31.3	111.1	17				
18	4	22.2	-26.3	111.7	4	00.0	-27.1	111.7	3	37.8	-28.0	111.8	3	15.5	-28.9	111.8	2	53.1	-29.7	111.9	2	30.7	-30.5	111.9	2	08.3	-31.4	112.0	18				
19	3	55.9	-26.3	112.6	3	32.9	-27.2	112.6	3	09.8	-28.0	112.7	2	46.6	-28.8	112.7	2	23.4	-29.7	112.8	2	00.2	-30.6	112.8	1	13.6	-32.1	112.9	19				
20	3	29.6	-26.3	113.5	3	05.7	-27.2	113.5	2	41.8	-28.1	113.6	2	17.8	-29.0	113.6	1	53.7	-29.7	113.6	1	29.6	-30.5	113.7	1	05.6	-31.4	113.7	20				
21	3	03.3	-26.4	114.4	2	38.5	-27.2	114.4	2	13.7	-28.1	114.4	1	48.8	-28.9	114.5	0	59.1	-30.6	114.5	0	34.2	-31.4	114.5	0	09.2	-32.1	114.5	21				
22	2	36.9	-26.5	115.3	2	11.3	-27.3	115.3	1	45.6	-28.1	115.3	1	19.9	-28.9	115.4	0	54.2	-29.8	115.4	0	28.5	-30.6	115.4	0	02.8	-31.4	115.4	22				
23	2	10.4	-26.4	116.2	1	44.0	-27.3	116.2	1	17.5	-28.2	116.2	0	51.0	-29.0	116.2	0	22.0	-29.0	117.1	0	05.3	+3.0	63.8	0	28.6	+3.1	63.8	0				
24	1	14.0	-26.5	117.1	0	49.3	-27.3	118.0	0	21.2	-28.2	118.0	0	07.0	+28.9	62.0	0	35.1	+29.8	62.0	1	03.2	+30.6	62.0	1	31.4	+31.3	62.1	1	59.5	+32.1	62.1	25
25	1	17.5	-26.5	118.0	0	51.0	-26.6	118.9	0	07.0	+28.1	61.1	0	35.9	+29.0	61.1	1	04.9	+29.7	61.2	2	02.7	+31.4	61.2	2	31.6	+32.1	61.2	26				
26	0	24.4	-26.5	119.8	0	05.3	+27.4	60.2	0	35.1	+28.1	60.3	1	04.9	+28.9	60.3	1	34.6	+29.7	60.3	2	04.3	+30.6	60.3	2	34.1	+31.2	60.3	27				
27	0	0.21	+26.5	59.4	0	32.7	+27.3	59.4	1	03.2	+28.2	59.4	2	02.7	+28.9	58.5	2	34.1	+29.6	58.5	3	05.3	+30.5	58.6	3	36.6	+31.2	58.6	29				
28	0	28.6	+26.5	58.5	1	00.0	+27.3	58.5	1	31.4	+28.1	58.5	2	02.7	+28.9	58.5	2	34.9	+30.4	59.5	3	05.3	+31.3	59.5	3	35.8	+32.0	59.5	28				
29	0	55.1	+26.6	57.6	1	27.3	+27.3	57.6	1	59.5	+28.1	57.6	2	31.6	+28.9	57.6	3	03.7	+29.6	57.7	3	35.8	+30.4	57.7	4	07.8	+31.1	57.8	30				
30	1	21.7	+26.4	56.7	1	54.6	+27.3	56.7	2	27.6	+28.0	56.7	3	00.5	+28.8	56.8	3	33.3	+29.6	56.8	4	06.2	+30.3	56.9	4	38.9	+31.1	56.9	31				
31	1	48.1	+26.5	55.8	2	21.9	+27.2	55.8	2	55.6	+28.0	55.8	3	29.3	+28.7	55.9	4	02.9	+29.5	55.9	4	36.5	+30.3	56.0	5	10.0	+30.1	56.1	32				
32	2	14.6	+26.4	54.9	2	49.1	+27.2	54.9	3	23.6	+28.0	54.9	3	58.0	+28.7	55.0	4	32.4	+29.5	55.1	5	06.8	+30.2	55.1	5	41.0	+31.0	55.2	33				
33	2	41.0	+26.4	54.0	3	16.3	+27.2	54.0	3	51.6	+27.9	54.1	4	26.7	+28.7	54.1	5	01.9	+29.4	54.2	6	12.0	+30.8	54.3	6	46.9	+31.6	54.4	34				
34	3	07.4	+26.4	53.1	3	43.5	+27.1	53.1	4	19.5	+27.8	53.2	5	45.4	+28.6	53.2	5	31.3	+29.3	53.3	6	07.1	+30.0	53.4	6	42.8	+30.8	53.5	35				
35	3	33.8	+26.3	52.2	4	10.6	+27.0	52.2	4	47.3	+27.8	52.3	5	24.0	+28.5	52.4	6	00.6	+29.2	52.4	6	37.1	+30.0	52.5	7	13.6	+30.7	52.6	36				
36	4	00.1	+26.2	51.3	4	37.6	+26.9	51.3	5	15.1	+27.6	51.4	5	52.5	+28.4	51.5	6	29.8	+29.1	51.6	7	44.3	+30.5	51.7	8	21.4	+31.2	51.9	37				
37	4	26.3	+26.2	50.4	5	04.5	+26.9	50.4	5	42.7	+27.6	50.5	6	20.9	+28.3	50.6	6	58.9	+29.1	50.7	7	36.9	+29.8	50.8	8	52.6	+31.2	51.0	38				
38	4	81.8	+25.3	49.4	8	9.3	+25.9	49.3	8	47.4	+26.6	49.4	10	31.7	+27.2	42.5	11	15.8	+28.7	42.7	12	43.9	+29.1	42.9	13	27.8	+29.7	43.1	47				
39	4	81.8	+25.2	49.3	9	03.1	+25.9	49.3	9	47.4	+26.6	49.4	10	31.7	+27.2	42.5	11	15.8	+28.5	42.8	12	43.9	+29.1	42.9	13	27.8	+29.7	42.2	48				
40	9	90.1	+25.0	49.4	9	54.8	+26.6	49.5	10	40.4	+26.2	49.6	11	25.9	+26.9	49.7	12	11.3	+27.5	49.8	12	56.7	+28.1	49.8	13	41.9	+28.7	49.8	49				
41	9	34.1	+24.8	39.4	10	20.4	+25.4	39.5	11	06.6	+26.1	39.7	11	52.8	+26.6	39.8	12	38.8	+27.3	39.9	13	24.8	+27.9	40.1	14	10.6	+28.5	40.2	40				
42	9	58.9	+24.7	38.5	10	45.8	+25.4	38.6	11	32.7	+25.9	38.7	12	19.4	+26.5																		

S. Lat. { L.H.A. greater than  $180^{\circ}$  ....Zn= $180^{\circ}$ -Z  
                   { L.H.A. less than  $180^{\circ}$ .....Zn= $180^{\circ}$ +Z

**LATITUDE SAME NAME AS DECLINATION**

L.H.A.  $103^\circ$ ,  $257^\circ$

78°, 282° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.				
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.				
0	11 02.0 +23.8	94.7	10 56.9 +24.8	94.9	10 51.7 +25.7	95.1	10 46.2 +26.7	95.3	10 40.5 +27.7	95.5	10 34.7 +28.6	95.7	10 28.6 +29.5	95.9	10 22.4 +30.4	96.1	10 16.3 +31.3	96.3	10 10.2 +32.2	96.5	10 4.1 +33.2	96.7	0						
1	11 25.8 +23.6	93.8	11 21.7 +24.6	94.0	11 17.4 +25.6	94.2	11 12.9 +26.5	94.4	11 08.2 +27.5	94.6	11 03.3 +28.4	94.8	10 58.1 +29.4	95.0	10 52.8 +30.3	95.2	10 47.2 +31.3	95.4	10 41.6 +32.2	95.6	10 36.0 +33.2	95.8	10 30.4 +34.2	96.0	1				
2	11 49.4 +23.5	92.9	11 46.3 +24.4	93.1	11 43.0 +25.4	93.3	11 39.4 +26.4	93.5	11 35.7 +27.3	93.7	11 31.7 +28.2	93.9	11 27.5 +29.2	94.1	11 23.1 +30.1	94.3	11 19.1 +31.1	94.5	11 15.3 +32.0	94.7	11 11.9 +33.0	94.9	11 7.7 +34.0	95.1	2				
3	12 12.9 +23.2	91.9	12 10.7 +24.3	92.1	12 08.4 +25.2	92.4	12 05.8 +26.2	92.6	12 03.0 +27.1	92.8	11 59.9 +28.1	93.0	11 56.7 +29.0	93.2	11 53.2 +30.0	93.4	11 49.8 +31.0	93.6	11 46.3 +32.0	93.8	11 42.8 +33.0	94.0	11 39.3 +34.0	94.2	3				
4	12 36.1 +23.0	91.0	12 35.0 +24.0	91.2	12 33.6 +25.0	91.4	12 32.0 +25.9	91.7	12 30.1 +26.9	91.9	12 28.0 +27.9	92.1	12 25.7 +28.8	92.3	12 23.2 +29.7	92.5	12 20.7 +30.6	92.7	12 18.2 +31.6	92.9	12 15.7 +32.6	93.1	12 13.2 +33.6	93.3	4				
5	12 59.1 +22.9	90.0	12 59.0 +23.8	90.3	12 58.6 +24.8	90.5	12 57.9 +25.8	90.7	12 57.0 +26.8	91.0	12 55.9 +27.7	91.2	12 54.5 +28.7	91.4	12 52.9 +29.6	91.7	12 50.3 +30.5	91.9	12 47.7 +31.4	92.1	12 45.1 +32.4	92.3	12 42.5 +33.4	92.5	5				
6	13 22.0 +22.6	89.1	13 22.8 +23.6	89.3	13 23.4 +24.6	89.6	13 23.7 +25.6	89.8	13 23.8 +26.6	90.0	13 23.6 +27.5	90.3	13 23.2 +28.5	90.5	13 22.5 +29.5	90.8	13 21.8 +30.4	91.0	13 21.1 +31.4	91.2	13 20.4 +32.4	91.4	13 19.7 +33.4	91.6	6				
7	13 44.6 +22.4	88.1	13 46.4 +23.4	88.4	13 48.0 +24.4	88.6	13 49.3 +25.4	88.9	13 50.4 +26.3	89.1	13 51.1 +27.4	89.4	13 51.7 +28.2	89.6	13 52.0 +29.2	89.9	14 21.2 +29.0	89.0	14 19.9 +28.1	88.7	14 18.5 +27.0	88.4	14 17.2 +25.9	88.1	14 16.0 +24.8	87.8	14 15.0 +23.8	87.5	7
8	14 07.0 +22.2	87.2	14 09.8 +23.2	87.4	14 12.4 +24.1	87.7	14 14.7 +25.1	87.9	14 16.7 +26.1	88.2	14 18.5 +27.0	88.4	14 19.9 +28.1	88.7	14 21.2 +29.0	88.0	14 20.0 +27.9	87.7	14 18.8 +26.8	87.4	14 17.6 +25.7	87.1	14 16.4 +24.6	86.8	14 15.2 +23.6	86.5	8		
9	14 29.2 +21.9	86.2	14 33.0 +22.9	86.5	14 36.5 +24.0	86.7	14 39.8 +24.9	87.0	14 42.8 +25.9	87.3	14 45.5 +26.8	87.5	14 48.0 +27.8	87.8	14 50.2 +28.8	88.1	14 52.9 +29.6	88.4	14 55.7 +30.5	88.7	14 58.1 +31.4	89.0	14 60.5 +32.4	89.3	14 62.3 +33.4	89.6	9		
10	14 51.1 +21.7	85.3	14 55.9 +22.8	85.5	15 00.5 +23.7	85.8	15 04.7 +24.7	86.1	15 08.7 +25.7	86.3	15 12.4 +26.7	86.6	15 15.8 +27.7	86.9	15 19.0 +28.5	87.1	15 22.4 +29.3	87.4	15 25.7 +30.2	87.7	15 29.0 +31.1	87.9	15 32.3 +32.0	88.2	15 35.6 +33.0	88.5	10		
11	15 12.8 +21.5	84.3	15 18.7 +22.4	84.6	15 24.2 +23.4	84.8	15 29.4 +24.5	85.1	15 34.4 +25.4	85.4	15 39.1 +26.4	85.7	15 43.5 +27.3	86.0	15 47.5 +28.4	86.2	15 51.7 +29.3	86.5	15 55.9 +30.2	86.8	15 60.1 +31.1	87.1	15 64.3 +32.0	87.4	15 67.6 +33.0	87.7	11		
12	15 34.3 +21.2	83.3	15 41.1 +22.2	83.6	15 47.6 +23.2	83.9	15 53.9 +24.2	84.2	15 59.8 +25.2	84.5	16 05.5 +26.2	84.7	16 10.8 +27.2	85.0	16 15.9 +28.1	85.3	16 21.0 +29.0	85.6	16 26.2 +29.9	85.9	16 31.4 +30.8	86.2	16 36.6 +31.7	86.5	16 41.8 +32.6	86.8	12		
13	15 55.5 +20.9	82.4	16 03.3 +22.0	82.6	16 10.9 +22.9	82.9	16 18.1 +23.9	83.2	16 25.0 +25.0	83.5	16 31.7 +25.8	83.8	16 38.0 +26.9	84.1	16 44.0 +27.9	84.4	16 50.9 +28.8	84.7	16 57.6 +29.7	85.0	16 64.4 +30.6	85.3	16 71.2 +31.5	85.6	16 77.9 +32.5	85.9	13		
14	16 16.4 +20.7	81.4	16 25.3 +21.6	81.7	16 33.8 +22.7	82.0	16 42.0 +23.7	82.3	16 50.0 +24.6	82.6	16 57.6 +25.6	82.9	17 04.9 +26.6	83.2	17 11.9 +27.6	83.5	17 18.8 +28.5	83.8	17 25.7 +29.4	84.1	17 32.6 +30.3	84.4	17 39.5 +31.2	84.7	14				
15	16 37.1 +20.4	80.4	16 46.9 +21.4	80.7	16 56.5 +22.4	81.0	17 05.7 +23.4	81.3	17 14.6 +24.4	81.6	17 23.2 +25.4	81.9	17 31.5 +26.4	82.2	17 39.5 +27.3	82.5	17 47.5 +28.2	82.8	17 55.7 +29.1	83.1	17 63.7 +30.0	83.4	17 71.7 +30.9	83.7	17 79.7 +31.8	84.0	15		
16	16 57.5 +20.1	79.4	17 08.3 +21.2	79.7	17 18.9 +22.1	80.0	17 29.1 +23.1	80.3	17 39.0 +24.2	80.6	17 48.6 +25.1	81.0	17 57.9 +26.1	81.3	18 06.8 +27.1	81.6	18 15.6 +28.0	82.0	18 24.4 +28.9	82.3	18 33.2 +29.8	82.6	18 42.0 +30.7	82.9	18 50.8 +31.6	83.2	16		
17	17 17.6 +19.8	78.4	17 29.5 +20.8	78.7	17 41.0 +21.9	79.1	17 52.2 +22.9	79.4	18 03.2 +23.8	79.7	18 13.7 +24.9	80.0	18 24.0 +25.8	80.3	18 33.9 +26.8	80.7	18 43.7 +27.7	81.0	18 53.5 +28.6	81.3	18 63.3 +29.5	81.6	18 73.1 +30.4	81.9	17				
18	17 37.4 +19.5	77.4	17 50.3 +20.5	77.8	18 02.9 +21.5	78.1	18 15.1 +22.5	78.4	18 27.0 +23.5	78.7	18 38.6 +24.5	79.0	18 49.8 +25.5	79.4	19 00.7 +26.5	79.7	19 10.5 +27.4	80.0	19 20.3 +28.3	80.3	19 30.1 +29.2	80.6	19 40.0 +30.1	80.9	18				
19	17 56.9 +19.2	76.5	18 10.8 +20.3	76.8	18 24.4 +21.2	77.1	18 37.6 +22.3	77.4	18 50.5 +23.3	77.7	19 03.1 +24.2	78.1	19 15.3 +25.2	78.4	19 27.2 +26.2	78.8	19 37.0 +27.1	79.1	19 46.8 +28.0	79.4	19 56.0 +28.9	79.7	19 65.8 +29.6	80.0	19				
20	18 16.1 +19.0	75.5	18 31.1 +19.9	75.8	18 45.6 +21.0	76.1	18 59.9 +21.9	76.4	19 13.8 +22.9	76.8	19 27.3 +23.9	77.1	19 40.5 +24.9	77.5	19 53.4 +25.9	77.8	20 05.1 +26.8	78.1	20 18.9 +27.7	78.4	20 32.7 +28.6	78.7	20 46.4 +29.5	79.0	20				
21	18 35.1 +18.5	74.5	18 51.0 +19.6	74.8	19 06.6 +20.6	75.1	19 21.8 +21.6	75.5	19 36.7 +22.6	75.9	19 51.2 +23.6	76.1	20 05.4 +24.6	76.5	20 19.3 +25.5	76.9	20 33.1 +26.4	77.2	20 46.8 +27.3	77.5	20 59.6 +28.2	77.8	20 72.7 +29.1	78.1	21				
22	18 53.6 +18.3	73.4	19 10.6 +19.2	73.8	19 27.2 +20.2	74.1	19 43.4 +21.3	74.5	19 59.3 +22.3	74.8	20 14.8 +23.3	75.2	20 30.0 +24.3	75.5	20 44.8 +25.3	75.9	21 05.2 +26.2	76.2	21 18.2 +27.1	76.5	21 32.0 +28.0	76.8	21 46.0 +28.9	77.1	21				
23	19 11.9 +17.9	72.4	19 29.8 +19.0	72.8	19 47.4 +20.0	73.1	20 04.7 +20.9	73.5	20 21.6 +21.9	73.8	20 38.1 +23.0	74.2	20 54.3 +23.9	74.5	21 10.1 +24.9	74.9	21 24.4 +25.8	75.2	21 38.9 +26.7	75.5	21 52.3 +27.5	75.8	21 66.0 +28.4	76.1	22				
24	19 29.8 +17.6	71.4	19 48.8 +18.6	71.8	20 07.4 +19.6	72.1	20 23.7 +20.5	72.5	20 45.3 +21.6	72.8	21 01.1 +22.6	73.2	21 18.2 +23.6	73.5	21 35.9 +24.5	73.8	22 04.9 +25.4	74.1	22 19.6 +26.3	74.4	22 34.0 +27.2	74.7	22 48.4 +28.1	75.0	22				
25	19 47.4 +17.3	70.4	20 07.4 +18.2	70.8	20 27.0 +19.2	71.1	20 46.2 +20.3	71.5	21 05.1 +21.3	71.8	21 23.7 +22.2	72.2	21 41.8 +23.2	72.6	21 59.6 +24.2	73.0	22 04.4 +25.1	73.3	22 18.2 +26.0	73.6	22 34.0 +26.9	73.9	22 47.7 +27.8	74.2	22				
26	20 04.7 +16.8	69.4	20 25.6 +17.9	69.7	20 46.2 +18.9	70.1	21 06.5 +19.9	70.5	21 26.4 +20.9	70.8	21 45.9 +21.9	71.2	22 05.0 +22.9	71.6	22 23.8 +23.9	72.0	22 38.4 +24.8	72.3	22 47.7 +25.7	72.6	22 56.7 +26.6	72.9	22 65.4 +27.5	73.2	23				
27	20 21.6 +16.5	68.4	20 43.5 +17.6	68.7	21 05.1 +18.6	69.1	21 26.4 +19.5	69.4	21 47.3 +20.5	69.8	22 07.8 +21.5	70.2	22 27.9 +22.5	70.6	22 47.7 +23.5	71.0	22 57.0 +24.4	71.4	22 66.3 +25.3	71.8	22 75.6 +26.2	72.2	22 84.9 +27.1	72.6	23				
28	20 38.1 +12.2	56.9	23 35.0 +13.1	57.2	24 07.3 +14.0	57.6	24 39.3 +14.9	58.0	25 10.9 +15.9	58.4	25 42.1 +16.9	58.8	26 13.0 +17.9	59.2	26 38.0 +18.8	59.6	26 43.5 +19.7	60.0	26 50.2 +20.6	6									

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 78°, 282°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.		
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z			
0	11 02.0 -24.0	94.7	10 56.9 -24.9	94.9	10 51.7 -25.9	95.1	10 46.2 -26.8	95.3	10 40.5 -27.8	95.5	10 34.7 -28.7	95.7	10 28.6 -29.6	95.9	10 22.4 -30.6	96.1	9 51.8 -30.7	96.9	9 17.1 -31.3	101.3	7 17.1 -31.3	101.3	0				
1	10 38.0 -24.1	95.7	10 32.0 -25.1	95.9	10 25.8 -26.1	96.1	10 19.4 -27.0	96.2	10 12.7 -27.9	96.4	10 06.0 -28.9	96.6	9 59.0 -29.8	96.8	9 21.1 -30.8	97.8	9 29.2 -29.9	97.6	9 21.1 -30.8	97.8	6 45.8 -31.3	102.1	2 21.1 -30.8	102.1	1		
2	10 13.9 -24.3	96.6	10 06.9 -25.2	96.8	9 59.7 -26.2	97.0	9 52.4 -27.2	97.1	9 44.8 -28.1	97.3	9 37.1 -29.0	97.5	9 29.2 -29.9	97.6	9 21.1 -30.8	97.8	8 59.3 -30.1	98.5	8 50.3 -31.0	98.7	8 19.3 -31.0	99.5	3 19.3 -31.0	99.5	4		
3	9 49.6 -24.4	97.5	9 41.7 -25.4	97.7	9 33.5 -26.3	97.9	9 25.2 -27.3	98.0	9 16.7 -28.2	98.2	9 08.1 -29.2	98.4	8 59.3 -30.1	98.5	8 29.2 -30.2	99.4	8 19.3 -31.0	99.5	8 19.3 -31.0	99.5	8 19.3 -31.0	99.5	8 19.3 -31.0	99.5	4		
4	9 25.2 -24.6	98.5	9 16.3 -25.6	98.6	9 07.2 -26.5	98.8	8 57.9 -27.4	98.9	8 48.5 -28.3	99.1	8 38.9 -29.2	99.3	8 29.2 -30.2	99.4	8 19.3 -31.0	99.5	8 19.3 -31.0	99.5	8 19.3 -31.0	99.5	8 19.3 -31.0	99.5	8 19.3 -31.0	99.5	4		
5	9 00.6 -24.7	99.4	8 50.7 -25.7	99.5	8 40.7 -26.6	99.7	8 30.5 -27.5	99.8	8 20.2 -28.5	100.0	8 09.7 -29.4	100.1	7 59.0 -30.2	100.3	7 48.3 -31.2	100.4	7 48.3 -31.2	100.4	7 48.3 -31.2	100.4	7 48.3 -31.2	100.4	7 48.3 -31.2	100.4	5		
6	8 35.9 -24.9	100.3	8 25.0 -25.8	100.5	8 14.1 -26.8	100.6	8 03.0 -27.0	100.7	7 51.7 -28.6	100.9	7 40.3 -29.5	101.0	7 28.8 -30.4	101.1	7 17.1 -31.3	101.3	6 45.8 -31.3	102.1	6 45.8 -31.3	102.1	6 45.8 -31.3	102.1	6 45.8 -31.3	102.1	6		
7	8 11.0 -25.0	101.2	7 59.2 -25.9	101.4	7 47.3 -26.8	101.5	7 35.3 -27.8	101.6	7 23.1 -28.7	101.8	7 10.8 -29.6	101.9	6 58.4 -30.5	102.0	6 27.9 -30.5	102.9	6 14.5 -31.5	103.0	6 14.5 -31.5	103.0	6 14.5 -31.5	103.0	6 14.5 -31.5	103.0	8		
8	7 46.0 -25.1	102.2	7 33.3 -26.0	102.3	7 20.5 -27.0	102.4	7 07.5 -27.8	102.5	6 54.4 -28.7	102.7	6 41.2 -29.6	102.8	6 27.9 -30.5	102.9	6 14.5 -31.5	103.0	6 14.5 -31.5	103.0	6 14.5 -31.5	103.0	6 14.5 -31.5	103.0	8				
9	7 20.9 -25.2	103.1	7 07.3 -26.2	103.2	6 53.5 -27.0	103.3	6 39.7 -28.0	103.4	6 25.7 -28.9	103.5	6 11.6 -29.8	103.6	5 57.4 -30.7	103.7	5 43.0 -31.5	103.8	5 43.0 -31.5	103.8	5 43.0 -31.5	103.8	5 43.0 -31.5	103.8	5 43.0 -31.5	103.8	9		
10	6 55.7 -25.3	104.0	6 41.1 -26.2	104.1	6 26.5 -27.2	104.2	6 11.7 -28.1	104.3	5 56.8 -29.0	104.4	5 41.8 -29.8	104.5	5 26.7 -30.7	104.6	5 11.5 -31.6	104.7	5 11.5 -31.6	104.7	5 11.5 -31.6	104.7	5 11.5 -31.6	104.7	5 11.5 -31.6	104.7	10		
11	6 30.4 -25.4	104.9	6 14.9 -26.3	105.0	5 59.3 -27.2	105.1	5 43.6 -28.1	105.2	5 27.8 -29.0	105.3	5 12.0 -29.9	105.4	4 56.0 -30.8	105.5	4 39.9 -31.6	105.6	4 39.9 -31.6	105.6	4 39.9 -31.6	105.6	4 39.9 -31.6	105.6	4 39.9 -31.6	105.6	11		
12	6 05.0 -25.5	105.8	5 48.6 -26.4	105.9	5 32.1 -27.3	106.0	5 15.5 -28.2	106.1	4 58.8 -29.1	106.2	4 42.1 -30.0	106.3	4 25.2 -30.8	106.3	4 08.3 -31.7	106.4	4 08.3 -31.7	106.4	4 08.3 -31.7	106.4	4 08.3 -31.7	106.4	4 08.3 -31.7	106.4	12		
13	5 39.5 -25.6	106.7	5 22.2 -26.5	106.8	5 04.8 -27.4	106.9	4 47.3 -28.3	107.0	4 29.7 -29.1	107.1	4 12.1 -30.1	107.1	3 54.4 -30.9	107.2	3 36.6 -31.7	107.3	3 36.6 -31.7	107.3	3 36.6 -31.7	107.3	3 36.6 -31.7	107.3	3 36.6 -31.7	107.3	13		
14	5 13.9 -25.7	107.6	4 55.7 -26.6	107.7	4 37.4 -27.5	107.8	4 19.0 -28.3	107.9	4 00.6 -29.3	107.9	3 42.0 -30.0	108.0	3 23.5 -31.0	108.1	3 04.9 -31.8	108.1	3 04.9 -31.8	108.1	3 04.9 -31.8	108.1	3 04.9 -31.8	108.1	3 04.9 -31.8	108.1	14		
15	4 48.2 -25.7	108.5	4 29.1 -26.7	108.6	4 09.9 -27.5	108.7	3 50.7 -28.4	108.7	3 31.3 -29.2	108.8	3 12.0 -30.2	108.9	2 52.5 -30.9	108.9	2 33.1 -31.8	109.0	2 33.1 -31.8	109.0	2 33.1 -31.8	109.0	2 33.1 -31.8	109.0	2 33.1 -31.8	109.0	15		
16	4 22.5 -25.9	109.4	4 02.4 -26.6	109.5	3 42.4 -27.6	109.6	3 22.3 -28.5	109.6	3 02.1 -29.3	109.7	2 41.8 -30.1	109.7	2 21.6 -31.0	109.8	2 01.3 -31.9	109.8	2 01.3 -31.9	109.8	2 01.3 -31.9	109.8	2 01.3 -31.9	109.8	2 01.3 -31.9	109.8	16		
17	3 56.6 -25.8	110.3	3 35.8 -26.8	110.4	3 14.8 -27.6	110.5	2 53.8 -28.5	110.5	2 32.8 -29.4	110.6	2 11.7 -30.2	110.6	1 50.6 -31.1	110.6	1 29.4 -31.9	110.7	1 29.4 -31.9	110.7	1 29.4 -31.9	110.7	1 29.4 -31.9	110.7	1 29.4 -31.9	110.7	17		
18	3 30.8 -25.9	111.2	3 09.0 -26.8	111.3	2 47.2 -27.7	111.3	2 25.3 -28.5	111.4	2 03.4 -29.4	111.4	1 41.5 -30.2	111.5	1 19.5 -31.0	111.5	1 05.7 -31.8	111.5	1 05.7 -31.8	111.5	1 05.7 -31.8	111.5	1 05.7 -31.8	111.5	1 05.7 -31.8	111.5	18		
19	3 04.9 -26.0	112.2	2 42.2 -26.8	112.2	2 19.5 -27.7	112.2	1 56.8 -28.5	112.3	1 34.0 -29.4	112.3	1 13.3 -30.3	112.3	0 48.5 -31.0	112.3	0 25.7 -31.9	112.3	0 25.7 -31.9	112.3	0 25.7 -31.9	112.3	0 25.7 -31.9	112.3	0 25.7 -31.9	112.3	19		
20	2 38.9 -26.0	113.1	2 15.4 -26.9	113.1	1 51.8 -27.7	113.1	1 28.3 -28.6	113.2	1 04.6 -29.4	113.2	0 41.0 -30.2	113.2	0 17.4 -31.1	113.2	0 06.2 +31.9	66.8	0 06.2 +31.9	66.8	0 06.2 +31.9	66.8	0 06.2 +31.9	66.8	0 06.2 +31.9	66.8	20		
21	2 12.9 -26.0	114.0	1 48.5 -26.9	114.0	1 24.1 -27.7	114.0	0 59.7 -28.6	114.0	0 35.2 -29.4	114.0	0 10.8 -30.3	114.1	0 13.7 +31.0	65.9	0 38.1 +31.9	66.0	0 38.1 +31.9	66.0	0 38.1 +31.9	66.0	0 38.1 +31.9	66.0	0 38.1 +31.9	66.0	21		
22	1 46.9 -26.1	114.9	1 21.6 -26.9	114.9	0 56.4 -27.8	114.9	0 31.1 -28.6	114.9	0 05.8 -29.4	114.9	0 19.5 +30.2	65.1	0 44.7 +31.1	65.1	1 10.0 +31.8	65.1	1 10.0 +31.8	65.1	1 10.0 +31.8	65.1	1 10.0 +31.8	65.1	1 10.0 +31.8	65.1	22		
23	1 20.8 -26.1	115.8	0 54.7 -26.9	115.8	0 28.6 -27.8	115.8	0 02.5 -28.6	115.8	0 26.1 +28.6	63.3	0 53.0 +29.4	63.3	0 19.5 +30.2	64.2	1 15.8 +31.0	64.2	1 41.8 +31.9	64.3	1 41.8 +31.9	64.3	1 41.8 +31.9	64.3	1 41.8 +31.9	64.3	23		
24	0 54.7 -26.1	116.7	0 27.8 -27.0	116.7	0 00.8 -27.7	116.7	0 26.9 +27.8	62.4	0 54.7 +28.5	62.4	1 22.4 +29.4	62.5	1 22.4 +29.4	62.5	1 50.1 +30.2	62.5	2 17.8 +31.0	62.5	2 45.5 +31.8	62.6	2 45.5 +31.8	62.6	2 45.5 +31.8	62.6	25		
25	0 28.6 -26.1	117.6	0 00.8 -26.9	117.6	0 26.1 +26.9	61.5	0 54.7 +27.7	61.6	1 22.4 +27.7	61.6	1 23.2 +28.6	61.6	1 51.8 +29.4	61.6	2 20.3 +30.3	61.6	2 48.8 +31.0	61.7	3 17.3 -31.7	61.7	3 17.3 -31.7	61.7	3 17.3 -31.7	61.7	3 17.3 -31.7	61.7	26
26	0 02.5 -26.1	118.5	0 26.1 +26.9	61.5	0 54.7 +27.7	61.6	1 22.4 +27.7	61.6	1 23.2 +28.5	61.6	1 51.8 +28.5	61.6	2 20.3 +30.3	61.6	2 48.8 +31.0	61.7	3 17.3 -31.7	61.7	3 17.3 -31.7	61.7	3 17.3 -31.7	61.7	3 17.3 -31.7	61.7	27		
27	0 23.6 +26.1	60.6	0 53.0 +26.9	60.6	1 22.4 +27.7	60.7	1 51.8 +28.5	60.7	2 20.3 +28.5	59.8	2 50.5 +29.3	59.9	3 19.8 +29.2	59.9	3 50.7 +30.0	59.9	4 21.5 +31.6	59.9	4 21.5 +31.6	59.9	4 21.5 +31.6	59.9	4 21.5 +31.6	59.9	27		
28	0 49.7 +26.1	59.7	1 19.9 +26.9	59.8	1 50.1 +27.7	59.8	2 20.3 +28.5	59.8	2 48.8 +28.5	59.8	3 19.8 +29.2	59.9	3 50.7 +30.0	59.9	4 21.5 +31.6	59.9	4 20.7 +31.6	60.0	4 20.7 +31.6	60.0	4 20.7 +31.6	60.0	4 20.7 +31.6	60.0	28		
29	1 15.8 +26.0	58.8	1 46.8 +26.9	58.9	2 17.8 +27.7	58.9	2 48.8 +28.5	58.9	3 19.8 +29.2	58.9	3 50.7 +30.0	59.9	4 21.5 +31.6	60.0	4 21.5 +31.6	60.0	4 21.5 +31.6	60.0	4 21.5 +31.6	60.0	4 21.5 +31.6	60.0	29				
30	1 41.8 +26.1	57.9	2 13.7 +26.8	58.0</td																							

79°, 281° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.
0	10 07.0 +23.7	94.3	10 02.3 +24.7	94.5	9 57.5 +25.7	94.7	9 52.5 +26.6	94.9	9 47.3 +27.6	95.0	9 41.9 +28.6	95.2	9 36.4 +29.4	95.4	9 30.7 +30.3	95.6	0	0	0	0	0	0	0	0	0
1	10 30.7 +23.6	93.4	10 27.0 +24.6	93.6	10 23.2 +25.5	93.8	10 19.1 +26.5	94.0	10 14.9 +27.4	94.1	10 10.5 +28.3	94.3	10 05.8 +29.3	94.5	10 01.0 +30.3	94.7	1	0	0	0	0	0	0	0	0
2	10 54.3 +23.4	92.5	10 51.6 +24.3	92.7	10 48.7 +25.3	92.9	10 45.6 +26.3	93.0	10 42.3 +27.3	93.2	10 38.8 +28.2	93.4	10 35.1 +29.2	93.6	10 31.3 +30.0	93.8	2	0	0	0	0	0	0	0	0
3	11 17.7 +23.2	91.5	11 15.9 +24.3	91.7	11 14.0 +25.2	91.9	11 11.9 +26.1	92.1	11 09.6 +27.1	92.3	11 07.0 +28.1	92.5	11 04.3 +29.0	92.7	11 01.3 +29.9	92.9	3	0	0	0	0	0	0	0	0
4	11 40.9 +23.0	90.6	11 40.2 +24.0	90.8	11 39.2 +25.0	91.0	11 38.0 +26.0	91.2	11 36.7 +26.9	91.4	11 35.1 +27.8	91.6	11 33.3 +28.8	91.8	11 31.2 +29.8	92.0	4	0	0	0	0	0	0	0	0
5	12 03.9 +22.9	89.7	12 04.2 +23.8	89.9	12 04.2 +24.8	90.1	12 04.0 +25.8	90.3	12 03.6 +26.7	90.5	12 02.9 +27.0	90.7	12 02.1 +28.6	90.9	12 01.0 +29.6	91.1	5	0	0	0	0	0	0	0	0
6	12 26.8 +22.6	88.7	12 28.0 +23.6	88.9	12 29.0 +24.6	89.1	12 29.8 +25.6	89.4	12 30.3 +26.6	89.6	12 30.7 +27.5	89.8	12 30.7 +28.5	90.0	12 30.6 +29.4	90.3	6	0	0	0	0	0	0	0	0
7	12 49.4 +22.5	87.8	12 51.6 +23.5	88.0	12 53.6 +24.5	88.2	12 55.4 +25.4	88.4	12 56.9 +26.4	88.7	12 58.2 +27.3	88.9	12 59.2 +28.3	89.1	13 00.0 +29.2	89.4	7	0	0	0	0	0	0	0	0
8	13 11.9 +22.2	86.8	13 15.1 +23.2	87.0	13 18.1 +24.2	87.3	13 20.8 +25.2	87.5	13 23.3 +26.1	87.7	13 25.5 +27.1	88.0	13 27.5 +28.1	88.2	13 29.2 +29.1	88.5	8	0	0	0	0	0	0	0	0
9	13 34.1 +22.0	85.8	13 38.3 +23.0	86.1	13 42.3 +24.0	86.3	13 46.0 +25.0	86.6	13 49.4 +26.0	86.8	13 52.6 +27.0	87.1	13 55.6 +27.9	87.3	13 58.3 +28.8	87.6	9	0	0	0	0	0	0	0	0
10	13 56.1 +21.8	84.9	14 01.3 +22.8	85.1	14 06.3 +23.7	85.4	14 11.0 +24.7	85.6	14 15.4 +25.7	85.9	14 19.6 +26.7	86.1	14 23.5 +27.6	86.4	14 27.1 +28.6	86.7	10	0	0	0	0	0	0	0	0
11	14 17.9 +21.5	83.9	14 24.1 +22.6	84.2	14 30.0 +23.6	84.4	14 35.7 +24.6	84.7	14 41.1 +25.5	85.0	14 46.3 +26.5	85.2	14 51.1 +27.5	85.5	14 55.7 +28.4	85.8	11	0	0	0	0	0	0	0	0
12	14 39.4 +21.4	83.0	14 46.7 +22.3	83.2	14 53.6 +23.3	83.5	15 00.3 +24.3	83.8	15 06.6 +25.3	84.0	15 12.8 +26.2	84.3	15 18.6 +27.2	84.6	15 24.1 +28.2	84.8	12	0	0	0	0	0	0	0	0
13	15 00.8 +21.0	82.0	15 09.0 +22.1	82.3	15 16.9 +23.1	82.5	15 24.6 +24.0	82.8	15 31.9 +25.1	83.1	15 39.0 +26.0	83.4	15 45.8 +27.0	83.6	15 52.3 +28.0	83.9	13	0	0	0	0	0	0	0	0
14	15 21.8 +20.8	81.0	15 31.1 +21.8	81.3	15 40.0 +22.8	81.6	15 48.6 +23.8	81.9	15 57.0 +24.8	82.1	16 05.0 +25.8	82.4	16 12.8 +26.7	82.7	16 20.3 +27.7	83.0	14	0	0	0	0	0	0	0	0
15	15 42.7 +20.5	80.1	15 52.9 +21.5	80.3	16 02.8 +22.6	80.6	16 12.4 +23.6	80.9	16 21.8 +24.5	81.2	16 30.8 +25.5	81.5	16 39.5 +26.5	81.8	16 48.0 +27.4	82.1	15	0	0	0	0	0	0	0	0
16	16 03.2 +20.3	79.1	16 14.4 +21.3	79.4	16 25.4 +22.3	79.7	16 36.0 +23.3	79.9	16 46.3 +24.3	80.2	16 56.3 +25.3	80.5	17 06.0 +26.3	80.8	17 15.4 +27.2	81.1	16	0	0	0	0	0	0	0	0
17	16 23.5 +20.0	78.1	16 35.7 +21.1	78.4	16 47.7 +22.0	78.7	16 59.3 +23.0	79.0	17 10.6 +24.0	79.3	17 21.6 +25.0	79.6	17 32.3 +25.9	79.9	17 42.6 +27.0	80.2	17	0	0	0	0	0	0	0	0
18	16 43.5 +19.8	77.1	16 56.8 +20.7	77.4	17 09.7 +21.7	77.7	17 22.3 +22.7	78.0	17 34.6 +23.7	78.3	17 46.6 +24.7	78.6	17 58.2 +25.7	79.0	18 09.6 +26.6	79.3	18	0	0	0	0	0	0	0	0
19	17 03.3 +19.4	76.1	17 17.5 +20.5	76.4	17 31.4 +21.5	76.7	17 45.0 +22.5	77.0	17 58.3 +23.5	77.4	18 11.3 +24.4	77.7	18 23.9 +25.4	78.0	18 36.2 +26.4	78.3	19	0	0	0	0	0	0	0	0
20	17 22.7 +19.2	75.1	17 38.0 +20.1	75.4	17 52.9 +21.1	75.8	18 07.5 +22.1	76.1	18 21.8 +23.1	76.4	18 35.7 +24.2	76.7	18 49.3 +25.2	77.0	19 02.6 +26.1	77.4	20	0	0	0	0	0	0	0	0
21	17 41.9 +18.8	74.1	17 58.1 +19.9	74.5	18 14.0 +20.9	74.8	18 29.6 +21.9	75.1	18 44.9 +22.9	75.4	18 59.9 +23.8	75.7	19 14.5 +24.8	76.1	19 28.7 +25.8	76.4	21	0	0	0	0	0	0	0	0
22	18 00.7 +18.6	73.1	18 18.0 +19.5	73.5	18 34.9 +20.5	73.8	18 51.5 +21.5	74.1	19 07.8 +22.5	74.4	19 23.7 +23.5	74.8	19 39.3 +24.5	75.1	19 54.5 +25.5	75.5	22	0	0	0	0	0	0	0	0
23	18 19.3 +18.2	72.1	18 37.5 +19.3	72.5	18 55.4 +20.3	72.8	19 13.0 +21.3	73.1	19 30.3 +22.2	73.5	19 47.2 +23.2	73.8	20 03.8 +24.1	74.1	20 20.0 +25.1	74.5	23	0	0	0	0	0	0	0	0
24	18 37.5 +17.9	71.1	18 56.8 +18.9	71.5	19 15.7 +19.9	71.8	19 34.3 +20.8	72.1	19 52.5 +21.9	72.5	20 10.4 +22.9	72.8	20 27.9 +23.9	73.2	20 45.1 +24.9	73.5	24	0	0	0	0	0	0	0	0
25	18 55.4 +17.6	70.1	19 15.7 +18.6	70.5	19 35.6 +19.5	70.8	19 55.1 +20.6	71.1	20 14.4 +21.5	71.5	20 33.3 +22.5	71.8	20 51.8 +23.5	72.2	21 10.0 +24.5	72.6	25	0	0	0	0	0	0	0	0
26	19 13.0 +17.3	69.1	19 34.3 +18.2	69.5	19 55.1 +19.3	69.8	20 15.7 +20.2	70.1	20 35.9 +21.2	70.5	20 55.8 +22.2	70.8	21 15.3 +23.2	71.2	21 34.5 +24.1	71.6	26	0	0	0	0	0	0	0	0
27	19 30.3 +16.9	68.1	19 52.5 +17.9	68.4	20 14.4 +18.9	68.8	20 35.9 +19.9	69.1	20 57.1 +20.9	69.5	21 18.0 +21.8	69.8	21 38.5 +22.8	70.2	21 58.6 +23.8	70.6	27	0	0	0	0	0	0	0	0
28	19 47.2 +16.6	67.1	20 10.4 +17.5	67.4	20 33.3 +18.5	67.8	20 55.8 +19.5	68.1	21 18.0 +20.5	68.5	21 39.8 +21.5	68.8	22 01.3 +22.4	69.2	22 22.4 +23.4	69.6	28	0	0	0	0	0	0	0	0
29	20 03.8 +16.2	66.1	20 27.9 +17.2	66.4	20 51.8 +18.2	66.8	21 15.3 +19.2	67.1	21 38.5 +20.1	67.5	22 01.3 +21.1	67.8	22 23.7 +22.1	68.2	22 45.8 +23.1	68.6	29	0	0	0	0	0	0	0	0
30	20 20.0 +15.8	65.0	20 45.1 +16.9	65.4	21 10.0 +17.8	65.7	21 34.5 +18.7	66.1	21 58.6 +19.8	66.5	21 23.4 +20.8	67.0	22 22.4 +20.7	67.8	22 45.8 +21.7	68.2	30	0	0	0	0	0	0	0	0
31	20 35.8 +15.5	64.0	21 02.0 +16.4	64.4	21 27.8 +17.4	64.7	21 53.2 +18.4	65.1	22 18.4 +19.3	65.4	22 43.1 +20.4	65.8	23 07.5 +21.3	66.2	23 31.5 +22.3	66.6	31	0	0	0	0	0	0	0	0
32	20 51.3 +15.1	63.0	21 18.4 +16.1	63.3	21 45.2 +17.0	63.7	22 11.6 +18.0	64.0	22 37.7 +19.0	64.4	23 03.5 +19.9	64.8	23 28.8 +20.9	65.2	23 53.8 +21.9	65.6	32	0	0	0	0	0	0	0	0
33	21 06.4 +14.8	61.9	21 34.5 +15.7	62.3	22 02.2 +16.7	62.6	22 29.6 +17.6	63.0	22 56.7 +18.6	63.4	23 23.4 +19.5	63.8	23 49.7 +20.5	64.2	24 15.7 +21.5	64.6	33	0	0	0	0	0	0	0	0
34	21 21.2 +14.3	60.9	21 50.2 +15.3	61.2	22 18.9 +16.2	61.6	22 47.2 +17.2	62.0	23 11.0 +13.1	62.7	24 48.8 +14.1	63.1	27 26.4 +14.9	64.5	28 03.6 +15.8	65.1	45	0	0	0	0	0	0	0	0
35	21 35.5 +14.0	59.9	22 05.5 +14.9	60.2	22 35.1 +15.9	60.6	23 04.4 +16.8	60.9	23 33.4 +17.8	61.3	24 02.1 +18														

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 79°, 281°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	10 07.0 -23.9	94.3	10 02.3 -24.8	94.5	9 57.5 -25.8	94.7	9 52.5 -26.8	94.9	9 47.3 -27.7	95.0	9 41.9 -28.6	95.2	9 36.4 -29.6	95.4	9 30.7 -30.5	95.6	9 25.1 -31.0	99.9	6 57.1 -30.2	99.8	6 51.7 -30.2	99.9	5		
1	9 43.1 -24.1	95.3	9 37.5 -25.0	95.4	9 31.7 -26.0	95.6	9 25.7 -26.9	95.8	9 19.6 -27.8	95.9	9 13.3 -28.8	96.1	9 06.8 -29.7	96.3	9 00.2 -30.6	96.4	9 00.2 -30.6	96.4	1						
2	9 19.0 -24.2	96.2	9 12.5 -25.2	96.4	9 05.7 -26.1	96.5	8 58.8 -27.0	96.7	8 51.8 -28.0	96.8	8 44.5 -28.9	97.0	8 37.1 -29.8	97.1	8 29.6 -30.7	97.3	2								
3	8 54.8 -24.3	97.1	8 47.3 -25.3	97.3	8 39.6 -26.2	97.4	8 31.8 -27.2	97.6	8 23.8 -28.1	97.7	8 15.6 -29.0	97.9	8 07.3 -29.9	98.0	7 58.9 -30.8	98.2	3								
4	8 30.5 -24.4	98.1	8 22.0 -25.4	98.2	8 13.4 -26.4	98.3	8 04.6 -27.3	98.5	7 55.7 -28.2	98.6	7 46.6 -29.1	98.8	7 37.4 -30.0	98.9	7 28.1 -31.0	99.0	4								
5	8 06.1 -24.6	99.0	7 56.6 -25.5	99.1	7 47.0 -26.4	99.3	7 37.3 -27.4	99.4	7 27.5 -28.3	99.5	7 17.5 -29.2	99.6	7 07.4 -30.2	99.8	6 57.1 -31.0	99.9	5								
6	7 41.5 -24.7	99.9	7 31.1 -25.6	100.0	7 20.6 -26.6	100.2	7 09.9 -27.5	100.3	6 59.2 -28.5	100.4	6 48.3 -29.4	100.5	6 37.2 -30.2	100.6	6 26.1 -31.1	100.8	6								
7	7 16.8 -24.8	100.8	7 05.5 -25.8	100.9	6 54.0 -26.7	101.1	6 42.4 -27.6	101.2	6 30.7 -28.5	101.3	6 18.9 -29.4	101.4	6 07.0 -30.3	101.5	5 55.0 -31.2	101.6	7								
8	6 52.0 -24.9	101.7	6 39.7 -25.8	101.9	6 27.3 -26.7	102.0	6 14.8 -27.7	102.1	6 02.2 -28.6	102.2	5 49.5 -29.5	102.3	5 36.7 -30.4	102.4	5 23.8 -31.3	102.5	8								
9	6 27.1 -25.0	102.7	6 13.9 -26.0	102.8	6 00.6 -26.9	102.9	5 47.1 -27.7	103.0	5 33.6 -28.6	103.1	5 20.0 -29.5	103.2	5 06.3 -30.4	103.2	4 52.5 -31.3	103.3	9								
10	6 02.1 -25.1	103.6	5 47.9 -26.0	103.7	5 33.7 -26.9	103.8	5 19.4 -27.9	103.9	5 05.0 -28.8	103.9	4 50.5 -29.7	104.0	4 35.9 -30.5	104.1	4 21.2 -31.4	104.2	10								
11	5 37.0 -25.2	104.5	5 21.9 -26.1	104.6	5 06.8 -27.1	104.7	4 51.5 -27.9	104.7	4 36.2 -28.8	104.8	4 20.8 -29.7	104.9	4 05.4 -30.6	105.0	3 49.8 -31.4	105.0	11								
12	5 11.8 -25.3	105.4	4 55.8 -26.2	105.5	4 39.7 -27.0	105.6	4 23.6 -28.0	105.6	4 07.4 -28.9	105.7	3 51.1 -29.7	105.8	3 34.8 -30.6	105.8	3 18.4 -31.5	105.9	12								
13	4 46.5 -25.3	106.3	4 29.6 -26.2	106.4	4 12.7 -27.2	106.5	3 55.6 -28.0	106.5	3 38.5 -28.9	106.6	3 21.4 -29.8	106.6	3 04.2 -30.7	106.7	2 46.9 -31.5	106.7	13								
14	4 21.2 -25.4	107.2	4 03.4 -26.3	107.3	3 45.5 -27.2	107.3	3 27.6 -28.1	107.4	3 09.6 -28.9	107.5	2 51.6 -29.8	107.5	2 33.5 -30.7	107.6	2 15.4 -31.5	107.6	14								
15	3 55.8 -25.5	108.1	3 37.1 -26.4	108.2	3 18.3 -27.2	108.2	2 59.5 -28.1	108.3	2 40.7 -29.0	108.3	2 21.8 -29.9	108.4	2 02.8 -30.7	108.4	1 43.9 -31.6	108.4	15								
16	3 30.3 -25.5	109.0	3 10.7 -26.4	109.1	2 51.1 -27.3	109.1	2 31.4 -28.2	109.2	2 11.7 -29.1	109.2	1 51.9 -29.9	109.2	1 32.1 -30.7	109.3	1 12.3 -31.6	109.3	16								
17	3 04.8 -25.6	109.9	2 44.3 -26.4	110.0	2 23.8 -27.3	110.0	2 03.2 -28.2	110.1	1 42.6 -29.0	110.1	1 22.0 -29.9	110.1	1 01.4 -30.8	110.1	0 40.7 -31.6	110.1	17								
18	2 39.2 -25.6	110.8	2 17.9 -26.5	110.9	1 56.5 -27.4	110.9	1 35.0 -28.2	110.9	1 13.6 -29.1	111.0	0 52.1 -29.9	111.0	0 30.6 -30.8	111.0	0 09.1 -31.6	111.0	18								
19	2 13.6 -25.6	111.7	1 51.4 -26.5	111.8	1 29.1 -27.4	111.8	1 06.8 -28.2	111.8	0 44.5 -29.1	111.8	0 22.2 -30.0	111.8	0 00.2 +0.0	68.1	0 22.5 +31.6	68.2	19								
20	1 48.0 -25.7	112.6	1 24.9 -26.5	112.7	1 01.7 -27.3	112.7	0 38.6 -28.3	112.7	0 15.4 -29.1	112.7	0 07.8 +29.9	67.3	0 30.9 +30.8	67.3	0 54.1 +31.6	67.3	20								
21	1 22.3 -25.6	113.6	0 58.4 -26.6	113.6	0 34.4 -27.4	113.6	0 10.3 -28.2	113.6	0 13.7 +29.1	66.4	0 37.7 +29.9	66.4	1 01.7 +30.7	66.4	1 25.7 +31.5	66.5	21								
22	0 56.7 -25.7	114.5	0 31.8 -26.5	114.5	0 0.70 -27.4	114.5	0 17.9 +28.2	65.5	0 42.8 +29.0	65.5	1 07.6 +29.9	65.6	1 32.4 +30.7	65.6	1 57.2 +31.6	65.6	22								
23	0 31.0 -25.7	115.4	0 05.3 -26.6	115.4	0 21.3 +26.5	63.7	0 47.8 +27.4	63.7	1 14.4 +28.2	63.8	1 40.9 +29.0	63.8	2 07.4 +29.8	63.8	2 33.8 +30.7	63.9	3 00.3 +31.4	63.9	24						
24	0 05.3 -25.7	116.3	0 21.3 +26.5	63.7	0 47.8 +27.4	63.7	1 14.4 +28.2	63.8	1 40.9 +29.0	63.8	2 07.4 +29.8	63.8	2 33.8 +30.7	63.9	3 00.3 +31.4	63.9	24								
25	0 20.4 +25.7	62.8	0 47.8 +26.6	62.8	1 15.2 +27.4	62.9	1 42.6 +28.2	62.9	2 09.9 +29.0	62.9	2 37.2 +29.8	62.9	3 04.5 +30.6	63.0	3 31.7 +31.4	63.0	25								
26	0 46.1 +25.7	61.9	1 14.4 +26.5	61.9	1 42.6 +27.3	62.0	2 10.8 +28.1	62.0	2 38.9 +29.0	62.0	3 07.0 +29.8	62.1	3 35.1 +30.6	62.1	4 03.1 +31.4	62.2	26								
27	1 11.8 +25.7	61.0	1 40.9 +26.5	61.0	2 09.9 +27.3	61.1	2 38.9 +28.1	61.1	3 07.9 +28.9	61.2	3 36.8 +29.7	61.2	4 05.7 +30.5	61.3	4 34.5 +31.3	61.3	27								
28	1 37.5 +25.6	60.1	2 07.4 +26.4	60.1	2 37.2 +27.3	60.2	3 07.0 +28.1	60.2	3 36.8 +28.9	60.3	4 06.5 +29.7	60.3	4 36.2 +30.4	60.4	5 05.8 +31.2	60.5	28								
29	2 03.1 +25.7	59.2	2 33.8 +26.5	59.3	3 04.5 +27.2	59.3	3 35.1 +28.0	59.3	4 05.7 +28.8	59.4	4 36.2 +29.6	59.5	5 06.6 +30.4	59.5	5 37.0 +31.2	59.6	29								
30	2 28.8 +25.5	58.3	3 00.3 +26.3	58.4	3 31.7 +27.2	58.4	4 03.1 +28.0	58.5	4 34.5 +28.7	58.5	5 05.8 +29.5	58.6	5 37.0 +30.3	58.7	6 08.2 +31.0	58.8	30								
31	2 54.3 +25.6	57.4	3 26.6 +26.4	57.5	3 58.9 +27.1	57.5	4 31.1 +27.9	57.6	5 03.2 +28.7	57.6	5 35.3 +29.5	57.7	6 07.3 +30.2	57.8	6 39.2 +31.0	57.9	31								
32	3 19.9 +25.4	56.5	3 53.0 +26.2	56.6	4 26.0 +27.1	56.6	4 59.0 +27.8	56.7	5 31.9 +28.6	56.8	6 04.8 +29.3	56.8	6 37.5 +30.2	56.9	7 10.2 +30.9	57.0	32								
33	3 45.3 +25.5	55.6	4 19.2 +26.2	55.7	4 53.1 +26.9	55.7	5 26.8 +27.8	55.8	6 00.5 +28.5	55.9	6 34.1 +29.3	56.0	7 07.7 +30.0	56.1	7 41.1 +30.8	56.2	33								
34	4 10.8 +25.3	54.7	4 45.4 +26.2	54.7	5 20.0 +26.9	54.8	5 54.6 +27.6	54.9	6 29.0 +28.4	55.0	7 03.4 +29.2	55.1	7 37.7 +29.9	55.2	8 11.9 +30.7	55.3	34								
35	4 36.1 +25.3	53.8	5 11.6 +26.0	53.8	5 46.9 +26.8	53.9	6 22.2 +27.6	54.0	6 57.4 +28.4	54.1	7 32.6 +29.1	54.2	8 07.6 +29.8	54.3	8 42.6 +30.5	54.4	35								
36	5 01.4 +25.2	52.9	5 37.6 +26.0	52.9	6 13.7 +26.8	53.0	6 49.8 +27.5	53.1	7 25.8 +28.2	53.2	8 01.7 +28.9	53.3	8 37.4 +29.7	53.4	9 13.1 +30.5	53.6	36								
37	5 26.6 +25.2	52.0	6 03.6 +25.9	52.0	6 40.5 +26.6	52.1	7 17.3 +27.3	52.2	7 54.0 +28.1	52.3	8 30.6 +28.8	52.4	9 07.1 +29.6	52.6	9 43.6 +30.3	52.7	37								
38	5 51.8 +25.0	51.0	6 29.5 +25.8	51.1	7 07.1 +26.5	51.2	7 44.6 +27.3	51.3	8 22.1 +28.0	51.4	8 59.4 +28.8	51.6	9 36.7 +29.4	51.7	10 13.9 +30.1	51.8	38								
39	6 16.8 +25.0	50.1	6 55.3 +25.6	50.2	7 33.6 +26.4	50.3	8 11.9 +27.1	50.4	8 50.1 +27.8	50.5	9 28.2 +28.5	50.7	10 06.1 +29.3	50.8	10 44.0 +30.0	50.9	39								
40	6 41.8 +24.8	49.2	7 20.9 +25.6	49.3	8 00.0 +26.3	49.4	8 39.0 +27.0	49.5	9 17.9 +27.7	49.6	9 56.7 +28.5	49.8	10 35.4 +29.2	49.9	11 14.0 +29.9	50.1	40								
41	7 06.6 +24.8	48.3	7 46.5 +25.5	48.4	8 26.3 +26.2	48.5	9 06.0 +26.9	48.6	9 45.6 +27.6	48.7	10 25.2 +28.2	48.9	11 04.6 +29.0	49.0	11 43.9 +29.6	49.2	41								
42	7 31.4 +24.6	47.4	8 12.0 +25.3	47.5	8 52.5 +26.0	47.6	9 32.9 +26.7	47.7	10 13.2 +27.5	47.8	10 53.4 +28.2	48.0	11 33.6 +28.8	48.1	12 13.5 +29.6	48.3	42								
43	7 56.0 +24.5	46.5	8 37.3 +25.2	46.6	9 18.5 +25.9	46.7	9 59.6 +26.6	46.8	10 40.7 +27.2	46.9															

80°, 280° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z																						
0	9 11.9	+23.6	93.9	9 07.7	+24.6	94.1	9 03.3	+25.6	94.3	8 58.7	+26.6	94.4	8 54.0	+27.5	94.6	8 49.2	+28.4	94.7	8 44.1	+29.4	94.9	8 39.0	+30.2	95.0	0
1	9 35.5	+23.6	93.0	9 32.3	+24.5	93.2	9 28.9	+25.5	93.3	9 25.3	+26.4	93.5	9 21.5	+27.4	93.7	9 17.6	+28.3	93.8	9 13.5	+29.2	94.0	9 09.2	+30.2	94.2	1
2	9 59.1	+23.3	92.1	9 56.8	+24.4	92.3	9 54.4	+25.3	92.4	9 51.7	+26.3	92.6	9 48.9	+27.2	92.8	9 45.9	+28.2	92.9	9 42.7	+29.1	93.1	9 39.4	+30.0	93.3	2
3	10 22.4	+23.3	91.1	10 21.2	+24.1	91.3	10 19.7	+25.1	91.5	10 18.0	+26.1	91.7	10 16.1	+27.1	91.9	10 14.1	+28.0	92.0	10 11.8	+29.0	92.2	10 09.4	+29.9	92.4	3
4	10 45.7	+23.0	90.2	10 45.3	+24.1	90.4	10 44.8	+25.0	90.6	10 44.1	+26.0	90.8	10 43.2	+26.9	91.0	10 42.1	+27.9	91.2	10 40.8	+28.8	91.3	10 39.3	+29.7	91.5	4
5	11 08.7	+22.9	89.3	11 09.4	+23.8	89.5	11 09.8	+24.8	89.7	11 10.1	+25.8	89.9	11 10.1	+26.8	90.1	11 10.0	+27.7	90.2	11 09.6	+28.7	90.4	11 09.0	+29.6	90.6	5
6	11 31.6	+22.6	88.3	11 33.2	+23.7	88.5	11 34.6	+24.7	88.7	11 35.9	+25.6	88.9	11 36.9	+26.6	89.1	11 37.7	+27.5	89.3	11 38.3	+28.4	89.5	11 38.6	+29.4	89.8	6
7	11 54.2	+22.5	87.4	11 56.9	+23.5	87.6	11 59.3	+24.4	87.8	12 01.5	+25.4	88.0	12 03.5	+26.4	88.2	12 05.2	+27.4	88.4	12 06.7	+28.3	88.7	12 08.0	+29.3	88.9	7
8	12 16.7	+22.3	86.4	12 20.4	+23.2	86.6	12 23.7	+24.3	86.9	12 26.9	+25.3	87.1	12 29.9	+26.2	87.3	12 32.6	+27.1	87.5	12 35.0	+28.2	87.7	12 37.3	+29.0	88.0	8
9	12 39.0	+22.1	85.5	12 43.6	+23.1	85.7	12 48.0	+24.1	85.9	12 52.2	+25.0	86.2	12 56.1	+26.0	86.4	12 59.7	+27.0	86.6	13 03.2	+27.9	86.8	13 06.3	+28.9	87.1	9
10	13 01.1	+21.9	84.5	13 06.7	+22.9	84.8	13 12.1	+23.8	85.0	13 17.2	+24.8	85.2	13 22.1	+25.8	85.5	13 26.7	+26.8	85.7	13 31.1	+27.7	85.9	13 35.2	+28.7	86.2	10
11	13 23.0	+21.7	83.6	13 29.6	+22.7	83.8	13 35.9	+23.7	84.0	13 42.0	+24.7	84.3	13 47.9	+25.6	84.5	13 53.5	+26.6	84.8	13 58.8	+27.6	85.0	14 03.9	+28.5	85.3	11
12	13 44.7	+21.4	82.6	13 52.3	+22.4	82.8	13 59.6	+23.4	83.1	14 06.7	+24.4	83.3	14 13.5	+25.4	83.6	14 20.1	+26.3	83.8	14 26.4	+27.3	84.1	14 32.4	+28.3	84.4	12
13	14 06.1	+21.2	81.6	14 14.7	+22.2	81.9	14 23.0	+23.2	82.1	14 31.1	+24.2	82.4	14 38.9	+25.1	82.7	14 46.4	+26.1	82.9	14 53.7	+27.1	83.2	15 00.7	+28.0	83.4	13
14	14 27.3	+21.0	80.7	14 36.9	+22.0	80.9	14 46.2	+23.0	81.2	14 55.3	+23.9	81.5	15 04.0	+25.0	81.7	15 12.5	+25.9	82.0	15 20.8	+26.8	82.3	15 28.7	+27.8	82.5	14
15	14 48.3	+20.7	79.7	14 58.9	+21.7	80.0	15 09.2	+22.7	80.2	15 19.2	+23.7	80.5	15 29.0	+24.7	80.8	15 38.4	+25.7	81.1	15 47.6	+26.7	81.3	15 56.5	+27.6	81.6	15
16	15 09.0	+20.5	78.7	15 20.6	+21.5	79.0	15 31.9	+22.5	79.3	15 42.9	+23.5	79.6	15 53.7	+24.4	79.8	16 04.1	+25.4	80.1	16 14.3	+26.4	80.4	16 24.1	+27.4	80.7	16
17	15 29.5	+20.2	77.8	15 42.1	+21.2	78.0	15 54.4	+22.2	78.3	16 06.4	+23.2	78.6	16 18.1	+24.2	78.9	16 29.5	+25.2	79.2	16 40.7	+26.1	79.5	16 51.5	+27.1	79.8	17
18	15 49.7	+20.0	76.8	16 03.3	+21.0	77.1	16 16.6	+21.9	77.3	16 29.6	+22.9	77.6	16 42.3	+23.9	77.9	16 54.7	+24.9	78.2	17 06.8	+25.8	78.5	17 18.6	+26.8	78.8	18
19	16 09.7	+19.7	75.8	16 24.3	+20.6	76.1	16 38.5	+21.7	76.4	16 52.5	+22.7	76.7	17 06.2	+23.7	77.0	17 19.6	+24.6	77.3	17 32.6	+25.6	77.6	17 45.4	+26.6	77.9	19
20	16 29.4	+19.4	74.8	16 44.9	+20.5	75.1	17 00.2	+21.4	75.4	17 15.2	+22.4	75.7	17 29.9	+23.3	76.0	17 44.2	+24.4	76.3	17 58.2	+25.4	76.6	18 12.0	+26.2	76.9	20
21	16 48.8	+19.1	73.8	17 05.4	+20.1	74.1	17 21.6	+21.1	74.4	17 37.6	+22.1	74.7	17 53.2	+23.1	75.0	18 08.6	+24.0	75.4	18 23.6	+25.0	75.7	18 38.2	+26.0	76.0	21
22	17 07.9	+18.9	72.8	17 25.5	+19.8	73.1	17 42.7	+20.8	73.4	17 59.7	+21.8	73.8	18 16.3	+22.8	74.1	18 32.6	+23.8	74.4	18 48.6	+24.7	74.7	19 04.2	+25.8	75.0	22
23	17 26.8	+18.5	71.8	17 45.3	+19.5	72.1	18 03.5	+20.6	72.5	18 21.5	+21.5	72.8	18 39.1	+22.5	73.1	18 56.4	+23.4	73.4	19 13.3	+24.5	73.7	19 30.0	+25.4	74.1	23
24	17 45.3	+18.2	70.8	18 04.8	+19.3	71.2	18 24.1	+20.2	71.5	18 43.0	+21.2	71.8	19 01.6	+22.1	72.1	19 19.8	+23.2	72.4	19 37.8	+24.1	72.8	19 55.4	+25.0	73.1	24
25	18 03.5	+18.0	69.8	18 24.1	+18.9	70.2	18 44.3	+19.9	70.5	19 04.2	+20.8	70.8	19 23.7	+21.9	71.1	19 43.0	+22.8	71.5	20 01.9	+23.8	71.8	20 20.4	+24.8	72.2	25
26	18 21.5	+17.6	68.8	18 43.0	+18.6	69.2	19 04.2	+19.5	69.5	19 25.0	+20.6	69.8	19 45.6	+21.5	70.1	20 05.8	+22.5	70.5	20 25.7	+23.5	70.8	20 45.2	+24.5	71.2	26
27	18 39.1	+17.3	67.8	19 01.6	+18.2	68.2	19 23.7	+19.3	68.5	19 45.6	+20.2	68.8	20 07.1	+21.2	69.1	20 28.3	+22.2	69.5	20 49.2	+23.1	69.8	21 09.7	+24.1	70.2	27
28	18 56.4	+16.9	66.8	19 19.8	+18.0	67.1	19 43.0	+18.9	67.5	20 05.8	+19.3	67.8	20 28.3	+20.9	68.1	20 50.5	+21.8	68.5	21 12.3	+22.8	68.9	21 33.8	+23.7	69.2	28
29	19 13.3	+16.7	65.8	19 37.8	+17.6	66.1	20 01.9	+18.5	66.5	20 25.7	+19.5	66.8	20 49.2	+20.5	67.1	21 12.3	+21.5	67.5	21 35.1	+22.4	67.9	21 57.5	+23.4	68.2	29
30	19 30.0	+16.2	64.8	19 55.4	+17.2	65.1	20 20.4	+18.3	65.4	20 45.2	+19.2	65.8	21 09.7	+20.1	66.1	21 33.8	+21.1	66.5	21 57.5	+22.1	66.9	22 20.9	+23.0	67.2	30
31	19 46.2	+16.0	63.8	20 12.6	+16.9	64.1	20 38.7	+17.8	64.4	21 04.4	+18.8	64.8	21 29.8	+19.8	65.1	21 54.9	+20.7	65.5	22 19.6	+21.7	65.9	22 43.9	+22.7	66.2	31
32	20 02.2	+15.5	62.7	20 29.5	+16.5	63.1	20 56.5	+17.5	63.4	21 23.2	+18.4	63.8	21 49.6	+19.4	64.1	22 15.6	+20.3	64.5	22 41.3	+21.3	64.9	23 06.6	+22.2	65.2	32
33	20 17.7	+15.2	61.7	20 46.0	+16.2	62.0	21 14.0	+17.1	62.4	21 41.6	+18.1	62.7	22 09.0	+19.0	63.1	22 35.9	+20.0	63.5	23 02.6	+20.9	63.8	23 28.8	+21.9	64.2	33
34	20 32.9	+14.9	60.7	21 02.2	+15.8	61.0	21 31.1	+16.7	61.4	21 59.7	+17.7	61.7	22 28.0	+18.6	62.1	22 55.9	+19.6	62.4	23 23.5	+20.5	62.8	23 50.7	+21.5	63.2	34
35	20 47.8	+14.5	59.6	21 18.0	+15.4	60.0	21 47.8	+16.4	60.3	22 17.4	+17.3	60.7	22 46.6	+18.2	61.0	23 15.5	+19.1	61.4	23 44.0	+20.1	61.8	24 12.2	+21.1	62.2	35
36	21 02.3	+14.1	58.6	21 33.4	+15.0	58.9	22 04.2	+15.9	59.3	22 34.7	+16.8	59.6	23 04.8	+17.8	60.0	23 34.6	+18.8	60.4	24 04.1	+19.7	60.8	24 33.3	+20.6	61.2	36
37	21 16.4	+13.7	57.6	21 48.4	+14.6	57.9	22 20.1	+15.6	58.2	22 51.5	+16.5	58.5	23 22.6	+17.4	59.0	23 53.4	+18.3	59.3							

**LATITUDE CONTRARY NAME TO DECLINATION**      **L.H.A. 80°, 280°**

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z													
0	9 11.9	-23.8	93.9	9 07.7	-24.8	94.1	9 03.3	-25.8	94.3	8 58.7	-26.6	94.4	8 54.0	-27.6	94.6	8 49.2	-28.6	94.7	8 44.1	-29.4	94.9	8 39.0	-30.5	95.0	0
1	8 48.1	-24.0	94.9	8 42.9	-24.9	95.0	8 37.5	-25.8	95.2	8 32.1	-26.9	95.3	8 26.4	-27.8	95.5	8 20.6	-28.7	95.6	8 14.7	-29.7	95.8	8 08.5	-30.5	95.9	1
2	8 24.1	-24.1	95.8	8 18.0	-25.1	95.9	8 11.7	-26.0	96.1	8 05.2	-26.9	96.2	7 58.6	-27.8	96.4	7 51.9	-28.8	96.5	7 45.0	-29.7	96.6	7 38.0	-30.6	96.8	2
3	8 00.0	-24.2	96.7	7 52.9	-25.2	96.9	7 45.7	-26.1	97.0	7 38.3	-27.1	97.1	7 30.8	-28.0	97.3	7 23.1	-28.9	97.4	7 15.3	-29.8	97.5	7 07.4	-30.7	97.6	3
4	7 35.8	-24.3	97.6	7 27.7	-25.2	97.8	7 19.6	-26.3	97.9	7 11.2	-27.1	98.0	7 02.8	-28.1	98.2	6 54.2	-29.0	98.3	6 45.5	-29.9	98.4	6 36.7	-30.8	98.5	4
5	7 11.5	-24.5	98.6	7 02.5	-25.4	98.7	6 53.3	-26.3	98.8	6 44.1	-27.3	98.9	6 34.7	-28.2	99.0	6 25.2	-29.1	99.2	6 15.6	-30.0	99.3	6 05.9	-30.9	99.4	5
6	6 47.0	-24.5	99.5	6 37.1	-25.5	99.6	6 27.0	-26.4	99.7	6 16.8	-27.3	99.8	6 06.5	-28.2	99.9	5 56.1	-29.1	100.0	5 45.6	-30.1	100.1	5 35.0	-31.0	100.2	6
7	6 22.5	-24.6	100.4	6 11.6	-25.6	100.5	6 00.6	-26.5	100.6	5 49.5	-27.4	100.7	5 38.3	-28.4	100.8	5 27.0	-29.3	100.9	5 15.5	-30.1	101.0	5 04.0	-31.0	101.1	7
8	5 57.9	-24.8	101.3	5 46.0	-25.6	101.4	5 34.1	-26.6	101.5	5 22.1	-27.6	101.6	5 09.9	-28.4	101.7	4 57.7	-29.3	101.8	4 45.4	-30.2	101.9	4 33.0	-31.1	102.0	8
9	5 33.1	-24.8	102.2	5 20.4	-25.6	102.3	5 07.5	-26.7	102.4	4 54.5	-27.5	102.5	4 41.5	-28.5	102.6	4 28.4	-29.4	102.7	4 15.2	-30.3	102.7	4 01.9	-31.1	102.8	9
10	5 08.3	-24.9	103.2	4 54.6	-25.8	103.2	4 40.8	-26.7	103.3	4 27.0	-27.7	103.4	4 13.0	-28.5	103.5	3 59.0	-29.4	103.5	3 44.9	-30.3	103.6	3 30.8	-31.2	103.7	10
11	4 43.4	-24.9	104.1	4 28.8	-25.9	104.1	4 14.1	-26.8	104.2	3 59.3	-27.7	104.3	3 44.5	-28.6	104.4	3 29.6	-29.5	104.5	3 14.6	-30.4	104.5	2 59.6	-31.2	104.5	11
12	4 18.5	-25.1	105.0	4 02.9	-25.9	105.1	3 47.3	-26.8	105.1	3 31.6	-27.7	105.2	3 15.9	-28.7	105.2	3 00.1	-29.5	105.3	2 44.2	-30.4	105.3	2 28.4	-31.3	105.4	12
13	3 53.4	-25.0	105.9	3 37.0	-26.0	106.0	3 20.5	-26.9	106.0	3 03.9	-27.8	106.1	2 47.2	-28.6	106.1	2 30.6	-29.6	106.2	2 13.8	-30.4	106.2	1 57.1	-31.3	106.2	13
14	3 28.4	-25.2	106.8	3 11.0	-26.1	106.9	2 53.6	-27.0	106.9	2 36.1	-27.9	107.0	2 18.6	-28.8	107.0	2 01.0	-29.6	107.0	1 43.4	-30.4	107.1	1 25.8	-31.3	107.1	14
15	3 03.2	-25.2	107.7	2 44.9	-26.1	107.8	2 26.6	-27.0	107.8	2 08.2	-27.8	107.8	1 49.8	-28.7	107.9	1 31.4	-29.6	107.9	1 13.0	-30.5	107.9	0 54.5	-31.3	107.9	15
16	2 38.0	-25.2	108.6	2 18.8	-26.1	108.7	1 59.6	-27.0	108.7	1 40.4	-27.9	108.7	1 21.1	-28.8	108.8	1 01.8	-29.6	108.8	0 42.5	-30.5	108.8	0 23.2	-31.4	108.8	16
17	2 12.8	-25.3	109.5	1 52.7	-26.1	109.6	1 32.6	-27.0	109.6	1 12.5	-27.9	109.6	0 52.3	-28.7	109.6	0 32.2	-29.6	109.6	0 12.0	-30.5	109.6	0 08.2	+31.3	70.4	17
18	1 47.5	-25.2	110.4	1 26.6	-26.2	110.5	1 05.6	-27.1	110.5	0 44.6	-27.9	110.5	0 23.6	-28.8	110.5	0 02.6	-29.7	110.5	0 18.5	+30.4	69.5	0 39.5	+31.3	69.5	18
19	1 22.3	-25.3	111.3	1 00.4	-26.2	111.4	0 38.5	-27.0	111.4	0 16.7	-27.9	111.4	0 05.2	+2.8	68.6	0 27.1	+2.6	68.6	0 48.9	+30.5	68.6	1 10.8	+31.3	68.6	19
20	0 57.0	-25.4	112.2	0 34.2	-26.2	112.3	0 11.5	-27.1	112.3	0 11.2	+2.8	67.7	0 34.0	+2.8	67.7	0 56.7	+2.9	67.8	1 19.4	+30.5	67.8	1 42.1	+31.3	67.8	20
21	0 31.6	-25.3	113.2	0 08.0	-26.2	113.2	0 15.6	+2.7	66.8	0 39.2	+2.7	66.8	1 02.7	+2.8	66.9	1 26.3	+2.9	66.9	1 49.9	+30.4	66.9	2 13.4	+31.2	66.9	21
22	0 06.3	-25.3	114.1	0 18.2	+2.6	65.9	0 42.6	+2.7	65.9	1 07.1	+2.7	66.0	1 31.5	+2.8	66.0	1 55.9	+2.9	66.0	2 20.3	+30.4	66.0	2 44.6	+31.2	66.1	22
23	0 19.0	+25.3	65.0	0 44.3	+26.2	65.0	1 09.7	+27.0	65.1	1 35.0	+27.8	65.1	2 00.2	+28.7	65.1	2 25.5	+29.5	65.1	2 50.7	+30.3	65.2	3 15.8	+31.2	65.2	23
24	0 44.3	+25.4	64.1	1 10.5	+26.2	64.1	1 36.7	+27.0	64.2	2 02.8	+27.9	64.2	2 28.9	+28.7	64.2	2 55.0	+29.5	64.3	3 21.0	+30.3	64.3	3 47.0	+31.1	64.4	24
25	1 09.7	+25.3	63.2	1 36.7	+26.1	63.2	2 03.7	+27.0	63.3	2 30.7	+27.8	63.3	2 57.6	+28.6	63.3	3 24.5	+29.4	63.4	3 51.3	+30.3	63.5	4 18.1	+31.1	63.5	25
26	1 35.0	+25.2	62.3	2 02.8	+26.1	62.3	2 30.7	+26.9	62.4	2 58.5	+27.7	62.4	3 26.2	+28.6	62.5	3 53.9	+29.4	62.5	4 21.6	+30.2	62.6	4 49.2	+31.0	62.7	26
27	2 00.2	+25.3	61.4	2 28.9	+26.1	61.4	2 57.6	+26.9	61.5	3 26.2	+27.7	61.6	3 54.8	+28.5	61.6	4 23.3	+29.4	61.7	5 20.2	+30.9	61.8	5 51.1	+30.8	60.9	27
28	2 25.5	+25.2	60.5	2 55.0	+26.0	60.5	3 24.5	+26.8	60.6	3 53.9	+27.6	60.6	4 23.3	+28.5	60.7	4 52.7	+29.2	60.8	5 21.9	+30.8	60.1	6 21.9	+30.8	60.1	29
29	2 50.7	+25.1	59.6	3 21.0	+26.0	59.6	3 51.3	+26.8	59.7	4 21.6	+27.6	59.7	4 51.8	+28.4	59.8	5 21.9	+29.2	59.9	5 52.0	+29.9	60.0	6 21.9	+30.8	60.1	29
30	3 15.8	+25.2	58.7	3 47.0	+25.9	58.7	4 18.1	+26.7	58.8	4 49.2	+27.5	58.9	5 20.2	+28.3	58.9	5 51.1	+29.1	59.0	6 21.9	+29.9	59.1	6 52.7	+30.7	59.2	30
31	3 41.0	+25.0	57.8	4 12.9	+25.9	57.8	4 44.8	+26.7	57.9	5 16.7	+27.5	58.0	5 48.5	+28.2	58.0	6 20.2	+29.0	58.1	6 51.8	+29.8	58.2	7 23.4	+30.5	58.3	31
32	4 06.0	+25.0	56.9	4 38.8	+25.8	56.9	5 11.5	+26.6	57.0	5 44.2	+27.3	57.1	6 16.7	+28.2	57.2	6 49.2	+28.9	57.3	7 21.6	+29.7	57.4	7 53.9	+30.5	57.5	32
33	4 31.0	+24.9	55.9	5 04.6	+25.7	56.0	5 38.1	+26.6	56.1	6 11.5	+27.3	56.2	6 44.9	+28.0	56.3	7 18.1	+28.9	56.4	7 51.3	+29.6	56.5	8 24.4	+30.3	56.6	33
34	4 55.9	+24.9	55.0	5 30.3	+25.6	55.1	6 38.8	+27.2	55.2	7 12.9	+28.0	55.4	7 47.0	+28.7	55.5	8 20.9	+29.5	55.6	8 54.7	+30.3	55.7	9 54.7	+30.3	55.7	34
35	5 20.8	+24.8	54.1	5 55.9	+25.6	54.2	6 31.0	+26.3	54.3	7 06.0	+27.0	54.4	7 40.9	+27.8	54.5	8 15.7	+28.6	54.6	8 50.4	+29.3	54.7	9 25.0	+30.0	54.9	35
36	5 45.6	+24.6	53.2	6 21.5	+25.4	53.3	6 57.3	+26.2	53.4	7 33.0	+27.0	53.5	8 08.7	+27.7	53.6	8 44.3	+28.4	53.7	9 19.7	+29.2	53.8	9 55.0	+30.0	54.0	36
37	6 10.2	+24.6	52.3	6 46.9	+25.4	52.4	7 23.5	+26.1	52.5	8 00.0	+26.8	52.6	8 36.4	+27.6	52.7	9 12.7	+28.3	52.8	9 48.9	+29.1	53.0	10 25.0	+29.8	53.1	37
38	6 34.8	+24.5	51.4	7 12.3	+25.2	51.5	7 49.6	+26.0	51.6	9 04.0	+27.5	51.8	9 41.0	+28.2	51.9	10 18.0	+28.9	52.1	10 54.						

81°, 279° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z																						
0	8 16.8	+23.6	93.5	8 13.0	+24.6	93.7	8 09.0	+25.6	93.8	8 05.0	+26.5	94.0	8 00.7	+27.5	94.1	7 56.4	+28.3	94.3	7 51.8	+29.3	94.4	7 47.2	+30.2	94.5	0
1	8 40.4	+23.5	92.6	8 37.6	+24.4	92.8	8 34.6	+25.4	92.9	8 31.5	+26.3	93.1	8 28.2	+27.3	93.2	8 24.7	+28.3	93.4	8 21.1	+29.2	93.5	8 17.4	+30.1	93.7	1
2	9 03.9	+23.3	91.7	9 02.0	+24.4	91.8	9 00.0	+25.3	92.0	8 57.8	+26.3	92.2	8 55.5	+27.2	92.3	8 53.0	+28.1	92.5	8 50.3	+29.1	92.6	8 47.5	+30.0	92.8	2
3	9 27.2	+23.2	90.7	9 26.4	+24.1	90.9	9 25.3	+25.2	91.1	9 24.1	+26.1	91.2	9 22.7	+27.1	91.4	9 21.1	+28.0	91.6	9 19.4	+28.9	91.7	9 17.5	+29.9	91.9	3
4	9 50.4	+23.1	89.8	9 50.5	+24.1	90.0	9 50.5	+24.9	90.2	9 50.2	+26.0	90.3	9 49.8	+26.9	90.5	9 49.1	+27.9	90.7	9 48.3	+28.8	90.9	9 47.4	+29.7	91.0	4
5	10 13.5	+22.8	88.9	10 14.6	+23.8	89.1	10 15.4	+24.9	89.2	10 16.2	+25.8	89.4	10 16.7	+26.7	89.6	10 17.0	+27.7	89.8	10 17.1	+28.7	90.0	10 17.1	+29.6	90.1	5
6	10 36.4	+22.7	87.9	10 38.4	+23.7	88.1	10 40.3	+24.7	88.3	10 42.0	+25.6	88.5	10 43.4	+26.6	88.7	10 44.7	+27.6	88.9	10 45.8	+28.5	89.1	10 46.7	+29.4	89.3	6
7	10 59.1	+22.5	87.0	11 02.1	+23.5	87.2	11 05.0	+24.5	87.4	11 07.6	+25.5	87.6	11 10.0	+26.5	87.8	11 12.3	+27.3	88.0	11 14.3	+28.3	88.2	11 16.1	+29.3	88.4	7
8	11 21.6	+22.4	86.0	11 25.6	+23.4	86.2	11 29.5	+24.3	86.5	11 33.1	+25.3	86.7	11 36.5	+26.2	86.9	11 39.6	+27.3	87.1	11 42.6	+28.2	87.3	11 45.4	+29.1	87.5	8
9	11 44.0	+22.1	85.1	11 49.0	+23.2	85.3	11 53.8	+24.1	85.5	11 58.4	+25.1	85.7	12 02.7	+26.1	85.9	12 06.9	+27.0	86.2	12 10.8	+28.0	86.4	12 14.5	+28.9	86.6	9
10	12 06.1	+22.0	84.2	12 12.2	+22.9	84.4	12 17.9	+24.0	84.6	12 23.5	+24.9	84.8	12 28.8	+25.9	85.0	12 33.9	+26.9	85.2	12 38.8	+27.8	85.5	12 43.4	+28.7	85.7	10
11	12 28.1	+21.8	83.2	12 35.1	+22.8	83.4	12 41.9	+23.7	83.6	12 48.4	+24.7	83.9	12 54.7	+25.7	84.1	13 00.8	+26.6	84.3	13 06.6	+27.6	84.6	13 12.1	+28.6	84.8	11
12	12 49.9	+21.6	82.2	12 57.9	+22.5	82.5	13 05.6	+23.6	82.7	13 13.1	+24.6	82.9	13 20.4	+25.5	83.2	13 27.4	+26.5	83.4	13 34.2	+27.4	83.6	13 40.7	+28.4	83.9	12
13	13 11.5	+21.3	81.3	13 20.4	+22.4	81.5	13 29.2	+23.3	81.8	13 37.7	+24.3	82.0	13 45.9	+25.3	82.2	13 53.9	+26.2	82.5	14 01.6	+27.2	82.7	14 09.1	+28.1	83.0	13
14	13 32.8	+21.2	80.3	13 42.8	+22.1	80.6	13 52.5	+23.1	80.8	14 02.0	+24.1	81.1	14 11.2	+25.0	81.3	14 20.1	+26.0	81.6	14 28.8	+27.0	81.8	14 37.2	+28.0	82.1	14
15	13 54.0	+20.9	79.4	14 04.9	+21.9	79.6	14 15.6	+22.9	79.9	14 26.1	+23.8	80.1	14 36.2	+24.9	80.4	14 46.1	+25.9	80.6	14 55.8	+26.8	80.9	15 05.2	+27.7	81.1	15
16	14 14.9	+20.7	78.4	14 26.8	+21.7	78.6	14 38.5	+22.7	78.9	14 49.9	+23.7	79.2	15 01.1	+24.6	79.4	15 12.0	+25.6	79.7	15 22.6	+26.5	80.0	15 32.9	+27.5	80.2	16
17	14 35.6	+20.4	77.4	14 48.5	+21.4	77.7	15 01.2	+22.4	77.9	15 13.6	+23.3	78.2	15 25.7	+24.3	78.5	15 37.5	+25.4	78.7	15 49.1	+26.3	79.0	16 00.4	+27.2	79.3	17
18	14 56.0	+20.2	76.5	15 09.9	+21.2	76.7	15 23.6	+22.1	77.0	15 36.9	+23.2	77.3	15 50.0	+24.2	77.5	16 02.9	+25.0	77.8	16 15.4	+26.0	78.1	16 27.6	+27.0	78.4	18
19	15 16.2	+19.9	75.5	15 31.1	+20.9	75.7	15 45.7	+21.9	76.0	16 00.1	+22.9	76.3	16 14.2	+23.8	76.6	16 27.9	+24.9	76.9	16 41.4	+25.8	77.1	16 54.6	+26.8	77.4	19
20	15 36.1	+19.7	74.5	15 52.0	+20.7	74.8	16 07.6	+21.7	75.0	16 23.0	+22.6	75.3	16 38.0	+23.6	75.6	16 52.8	+24.5	75.9	17 07.2	+25.6	76.2	17 21.4	+26.5	76.5	20
21	15 55.8	+19.4	73.5	16 12.7	+20.4	73.8	16 29.3	+21.4	74.1	16 45.6	+22.3	74.4	17 01.6	+23.3	74.7	17 17.3	+24.3	75.0	17 32.8	+25.2	75.3	17 47.9	+26.2	75.6	21
22	16 15.2	+19.1	72.5	16 33.1	+20.1	72.8	16 50.7	+21.0	73.1	17 07.9	+22.1	73.4	17 24.9	+23.1	73.7	17 41.6	+24.1	74.0	17 58.0	+25.0	74.3	18 14.1	+25.9	74.6	22
23	16 34.3	+18.9	71.5	16 53.2	+19.8	71.8	17 11.7	+20.9	72.1	17 30.0	+21.8	72.4	17 48.0	+22.7	72.7	18 05.7	+23.7	73.0	18 23.0	+24.7	73.3	18 40.0	+25.7	73.7	23
24	16 53.2	+18.5	70.6	17 13.0	+19.6	70.8	17 32.6	+20.5	71.1	17 51.8	+21.5	71.4	18 10.7	+22.5	71.8	18 29.4	+23.4	72.1	18 47.7	+24.4	72.4	19 05.7	+25.3	72.7	24
25	17 11.7	+18.3	69.6	17 32.6	+19.2	69.9	17 53.1	+20.2	70.2	18 13.3	+21.2	70.5	18 33.2	+22.2	70.8	18 52.8	+23.1	71.1	19 12.1	+24.1	71.4	19 31.0	+25.1	71.8	25
26	17 30.0	+18.0	68.6	17 51.8	+18.9	68.9	18 13.3	+19.9	69.2	18 34.5	+20.9	69.5	18 55.4	+21.8	69.8	19 15.9	+22.8	70.1	19 36.2	+23.8	70.4	19 56.1	+24.7	70.8	26
27	17 48.0	+17.7	67.6	18 10.7	+18.7	67.9	18 33.2	+19.6	68.2	18 55.4	+20.5	68.5	19 17.2	+21.5	68.8	19 38.7	+22.5	69.1	20 00.0	+23.4	69.5	20 20.8	+24.4	69.8	27
28	18 05.7	+17.3	66.6	18 29.4	+18.3	66.9	18 52.8	+19.3	67.2	19 15.9	+20.3	67.5	19 38.7	+21.3	67.8	20 01.2	+22.2	68.2	20 23.4	+23.1	68.5	20 45.2	+24.1	68.8	28
29	18 23.0	+17.0	65.5	18 47.7	+18.0	65.9	19 12.1	+18.9	66.2	19 36.2	+19.2	66.5	20 00.0	+20.8	66.8	20 23.4	+21.8	67.2	20 46.5	+22.8	67.5	21 09.3	+23.7	67.9	29
30	18 40.0	+16.7	64.5	19 05.7	+17.6	64.8	19 31.0	+18.7	65.2	19 56.1	+19.6	65.5	20 08.8	+20.5	65.8	20 45.2	+21.5	66.2	21 09.3	+22.4	66.5	21 33.0	+23.4	66.9	30
31	18 56.7	+16.4	63.5	19 23.3	+17.4	63.8	19 49.7	+18.2	64.2	20 15.7	+19.2	64.5	20 41.3	+20.2	64.8	21 06.7	+21.1	65.2	21 31.7	+22.1	65.5	21 56.4	+23.1	65.9	31
32	19 13.1	+16.1	62.5	19 40.7	+17.0	62.8	20 07.9	+18.0	63.1	20 34.9	+18.9	63.5	21 01.5	+19.8	63.8	21 27.8	+20.8	64.2	21 53.8	+21.7	64.5	22 19.5	+22.6	64.9	32
33	19 29.2	+15.6	61.5	19 57.7	+16.6	61.8	20 25.9	+17.5	62.1	20 53.8	+18.5	62.5	21 21.3	+19.5	62.8	21 48.6	+20.4	63.2	22 15.5	+21.4	63.5	22 42.1	+22.3	63.9	33
34	19 44.8	+15.4	60.5	20 14.3	+16.3	61.1	21 12.3	+18.1	61.4	21 40.8	+19.1	61.8	22 09.0	+20.0	62.1	22 36.9	+20.9	62.5	23 04.4	+21.9	62.9	23 04.4	+21.9	62.9	34
45	22 13.0	+11.1	49.0	22 52.3	+11.9	49.3	23 31.3	+12.7	49.6	24 10.0	+13.6	50.0	24 48.5	+14.5	50.3	25 26.7	+15.7	50.7	26 04.5	+16.2	51.0	26 42.1	+17.1	51.4	45
46	22 24.1	+10.7	47.9	23 04.2	+11.5	48.2	23 44.0	+12.4	48.5	24 23.6	+13.2	48.9	25 03.0	+14.0	49.2	25 42.0	+14.9	49.6	26 20.7	+15.8	50.0	26 59.2	+16.6	50.3	46
47	22 34.8	+10.2	46.8	23 15.7	+11.1	47.2	23 56.4	+11.9	47.5	24 36.8	+12.7	47.8	25 17.0	+13.5	48.2	25 56.9	+14.3	48.5	26 36.5	+15.2					

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $81^\circ$ , 279°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	8	16.8	-23.8	93.5	8	13.0	-24.7	93.7	8	09.0	-25.6	93.8	8	05.0	-26.7	94.0	8	00.7	-27.5	94.1	7	56.4	-28.5	94.3	7	51.8	-29.4	94.4	7	47.2	-30.4	94.5	0
1	7	53.0	-23.9	94.5	7	48.3	-24.9	94.6	7	43.4	-25.8	94.7	7	38.3	-26.7	94.9	7	33.2	-27.7	95.0	7	27.9	-28.6	95.1	7	22.4	-29.5	95.3	7	16.8	-30.4	95.4	1
2	7	29.1	-24.0	95.4	7	23.4	-24.9	95.5	7	17.6	-25.9	95.7	7	11.6	-26.8	95.8	7	05.5	-27.8	95.9	6	59.3	-28.7	96.0	6	52.9	-29.6	96.1	6	46.4	-30.5	96.3	2
3	7	05.1	-24.1	96.3	6	58.5	-25.1	96.4	6	51.7	-26.0	96.6	6	44.8	-27.0	96.7	6	37.7	-27.9	96.8	6	30.6	-28.6	96.9	6	23.3	-29.7	97.0	6	15.9	-30.6	97.1	3
4	6	41.0	-24.2	97.2	6	33.4	-25.1	97.4	6	25.7	-26.1	97.5	6	17.8	-27.0	97.6	6	09.8	-27.9	97.7	6	01.8	-28.9	97.8	5	53.6	-29.8	97.9	5	45.3	-30.7	98.0	4
5	6	16.8	-24.3	98.2	6	08.3	-25.3	98.3	5	59.6	-26.2	98.4	5	50.8	-27.1	98.5	5	41.9	-28.1	98.6	5	32.9	-29.0	98.7	5	23.8	-29.9	98.8	5	14.6	-30.8	98.9	5
6	5	52.5	-24.4	99.1	5	43.0	-25.3	99.2	5	33.4	-26.3	99.3	5	23.7	-27.2	99.4	5	13.8	-28.1	99.5	5	03.9	-29.0	99.6	4	43.8	-30.8	99.7	6				
7	5	28.1	-24.4	100.0	5	17.7	-25.4	100.1	5	07.1	-26.3	100.2	4	56.5	-27.3	100.3	4	45.7	-28.2	100.4	4	34.9	-29.1	100.4	4	24.0	-30.0	100.5	4	13.0	-30.9	100.6	7
8	5	03.7	-24.6	100.9	4	52.3	-25.5	101.0	4	40.8	-26.4	101.1	4	29.2	-27.3	101.2	4	17.5	-28.2	101.2	4	05.8	-29.1	101.3	3	54.0	-30.0	101.4	8				
9	4	39.1	-24.6	101.8	4	26.8	-25.6	101.9	4	14.4	-26.5	102.0	4	01.9	-27.4	102.1	3	49.3	-28.3	102.1	3	36.7	-29.2	102.2	3	11.2	-31.0	102.3	9				
10	4	14.5	-24.7	102.7	4	01.2	-25.6	102.8	3	47.9	-26.6	102.9	3	34.5	-27.5	102.9	3	21.0	-28.4	103.0	3	07.5	-29.3	103.1	2	53.9	-30.2	103.1	10				
11	3	49.8	-24.7	103.7	3	35.6	-25.7	103.7	3	21.3	-26.5	103.8	3	07.0	-27.5	103.8	2	52.6	-28.3	103.9	2	23.7	-30.1	104.0	11								
12	3	25.1	-24.8	104.6	3	09.9	-25.7	104.6	2	54.8	-26.7	104.7	2	39.5	-27.5	104.7	2	24.3	-28.5	104.8	1	53.6	-30.2	104.8	12								
13	3	00.3	-24.9	105.5	2	44.2	-25.7	105.5	2	28.1	-26.6	105.6	2	12.0	-27.6	105.6	1	55.8	-28.4	105.7	1	23.4	-30.2	105.7	13								
14	2	35.4	-24.9	106.4	2	18.5	-25.8	106.4	2	01.5	-26.7	106.5	1	44.4	-27.6	106.5	1	27.4	-28.5	106.5	0	53.2	-30.2	106.6	14								
15	2	10.5	-24.9	107.3	1	52.7	-25.8	107.3	1	34.8	-26.7	107.4	1	16.8	-27.6	107.4	0	58.9	-28.5	107.4	0	23.0	-30.3	107.4	15								
16	1	45.6	-24.9	108.2	1	26.9	-25.9	108.2	0	10.8	-26.8	108.3	0	30.4	-28.5	108.3	0	11.6	-29.4	108.3	0	07.3	+30.2	71.7	16								
17	1	20.7	-25.0	109.1	1	01.0	-25.8	109.1	0	41.3	-26.7	109.2	0	21.6	-27.6	109.2	0	01.9	-28.5	109.2	0	17.8	+29.3	70.8	17								
18	0	55.7	-25.0	110.0	0	35.2	-25.9	110.0	0	14.6	-26.8	110.1	0	06.0	-27.6	110.1	0	47.1	-29.4	110.1	0	10.7	+30.2	70.0	18								
19	0	30.7	-24.9	110.9	0	09.3	-25.9	111.0	0	12.2	-26.7	69.0	0	33.6	-27.6	69.1	0	55.1	-28.4	69.1	1	16.5	+29.3	69.1	1								
20	0	05.8	-25.0	111.9	0	16.6	+25.8	68.1	0	38.9	-26.7	68.2	1	01.2	-27.6	68.2	1	23.5	-28.5	68.2	1	45.8	+29.3	68.2	2	30.3	+31.0	68.3	20				
21	0	19.2	+25.0	67.2	0	42.4	+25.9	67.2	1	05.6	+26.8	67.3	1	28.8	+27.6	67.3	1	52.0	+28.4	67.3	2	15.1	+29.3	67.3	2	38.2	+30.1	67.4	21				
22	0	44.2	+25.0	66.3	1	08.3	+25.8	66.3	1	32.4	+26.6	66.4	1	56.4	+27.5	66.4	2	20.4	+28.4	66.4	2	44.4	+29.2	66.5	3	38.3	+30.1	66.5	22				
23	1	09.2	+24.9	65.4	1	34.1	+25.8	65.4	1	59.0	+26.7	65.5	2	23.9	+27.6	65.5	2	48.8	+28.4	65.5	3	13.6	+29.2	65.6	3	38.4	+30.0	65.6	23				
24	1	34.1	+24.9	64.5	1	59.9	+25.8	64.5	2	25.7	+26.6	64.6	2	51.5	+27.4	64.6	3	17.2	+28.3	64.7	3	42.8	+29.2	64.7	4	34.0	+30.7	64.8	24				
25	1	59.0	+24.9	63.6	2	25.7	+25.8	63.6	2	52.3	+26.6	63.7	3	18.9	+27.5	63.7	3	45.5	+28.2	63.8	4	12.0	+29.0	63.8	4	38.4	+29.9	63.9	5	04.7	+30.7	64.0	25
26	2	23.9	+24.9	62.7	2	51.5	+25.7	62.7	3	18.9	+26.6	62.8	3	46.4	+27.3	62.8	4	13.7	+28.2	62.9	4	41.0	+29.0	63.0	5	08.3	+29.8	63.0	6	35.4	+30.7	63.1	26
27	2	48.8	+24.8	61.8	3	17.2	+25.6	61.8	3	45.5	+26.5	61.9	4	13.7	+27.3	61.9	4	41.9	+28.1	62.0	5	10.0	+29.0	62.1	5	38.1	+29.7	62.2	6	06.1	+30.5	62.3	27
28	3	13.6	+24.8	60.9	3	42.8	+25.6	60.9	4	12.0	+26.4	61.0	4	41.0	+27.3	61.0	5	10.0	+28.1	61.1	5	39.0	+28.8	61.1	6	07.8	+29.7	61.3	6	36.6	+30.5	61.4	28
29	3	38.4	+24.7	60.0	4	08.4	+25.6	60.0	4	38.4	+26.3	60.1	5	08.3	+27.1	60.2	5	38.1	+28.0	60.2	6	07.8	+28.8	60.3	6	37.5	+29.6	60.4	7	07.1	+30.3	60.5	29
30	4	03.1	+24.7	59.0	4	34.0	+25.4	59.1	5	04.7	+26.3	59.2	5	35.4	+27.1	59.3	6	06.1	+27.9	59.3	6	36.6	+28.7	59.4	7	07.1	+29.5	59.5	7	37.4	+30.3	59.7	30
31	4	27.8	+24.5	58.1	4	59.4	+25.4	58.2	5	31.0	+26.2	58.3	6	02.5	+27.0	58.4	6	34.0	+27.7	58.5	7	05.3	+28.6	58.6	8	07.7	+30.2	58.8	31				
32	4	52.3	+24.6	57.2	5	24.8	+25.3	57.3	5	57.2	+26.1	57.4	6	29.5	+26.9	57.5	7	01.7	+27.7	57.6	7	33.9	+28.5	57.7	8	37.9	+30.0	57.9	32				
33	5	16.9	+24.4	56.3	5	50.1	+25.2	56.4	6	23.3	+26.0	56.5	6	6.6	+26.8	56.6	7	29.4	+27.6	56.7	8	02.4	+28.3	56.8	8	35.2	+29.1	56.9	9	07.9	+29.9	57.0	33
34	5	41.3	+24.3	55.4	6	15.3	+25.2	55.5	6	49.3	+25.9	55.6	7	57.0	+27.5	55.7	8	30.7	+28.3	55.9	9	04.3	+29.0	56.0	9	37.8	+29.8	56.2	34				
35	6	05.6	+24.3	54.5	6	40.5	+25.0	54.5	7	15.2	+25.8	54.6	8	24.5	+27.3	54.9	8	59.0	+28.1	55.0	9	33.3	+28.9	55.1	10	07.6	+29.6	55.3	35				
36	6	29.9	+24.1	53.5	7	05.5	+24.9	53.6	7	41.0	+25.7	53.7	8	16.5	+26.4	53.8	8	51.8	+27.2	54.0	9	27.1	+27.9	54.1	10	02.2	+28.7	54.2	10	37.2	+29.5	54.4	36
37	6	54.0	+24.1	52.6	7	30.4	+24.8	52.7	8	06.7	+25.6	52.8	8	42.9	+26.4	52.9	9	19.0	+27.1	53.1	9	55.0	+27.9	53.2	10	30.9	+28.6	53.3	11	06.7	+29.3	53.5	

82°, 278° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z																						
0	7 21.6	+23.6	93.1	7 18.3	+24.5	93.3	7 14.8	+25.5	93.4	7 11.2	+26.4	93.5	7 07.4	+27.4	93.7	7 03.5	+28.3	93.8	6 59.5	+29.3	93.9	6 55.4	+30.1	94.0	0
1	7 45.2	+23.5	92.2	7 42.8	+24.4	92.4	7 40.3	+25.4	92.5	7 37.6	+26.3	92.6	7 34.8	+27.3	92.8	7 31.8	+28.3	92.9	7 28.8	+29.1	93.0	7 25.5	+30.1	93.1	1
2	8 08.7	+23.3	91.3	8 07.2	+24.3	91.4	8 05.7	+25.2	91.6	8 03.9	+26.3	91.7	8 02.1	+27.2	91.9	8 00.1	+28.1	92.0	7 57.9	+29.0	92.1	7 55.6	+30.0	92.3	2
3	8 32.0	+23.2	90.4	8 31.5	+24.2	90.5	8 30.9	+25.2	90.7	8 30.2	+26.1	90.8	8 29.3	+27.0	91.0	8 28.2	+28.0	91.1	8 26.9	+29.0	91.3	8 25.6	+29.8	91.4	3
4	8 55.2	+23.1	89.4	8 55.7	+24.1	89.6	8 56.1	+25.0	89.7	8 56.3	+25.9	89.9	8 56.3	+26.9	90.1	8 56.2	+27.8	90.2	8 55.9	+28.8	90.4	8 55.4	+29.7	90.5	4
5	9 18.3	+22.9	88.5	9 19.8	+23.8	88.7	9 21.1	+24.8	88.8	9 22.2	+25.8	89.0	9 23.2	+26.8	89.1	9 24.0	+27.7	89.3	9 24.7	+28.6	89.5	9 25.1	+29.6	89.6	5
6	9 41.2	+22.7	87.6	9 43.6	+23.8	87.7	9 45.9	+24.7	87.9	9 48.1	+25.6	88.1	9 50.0	+26.6	88.2	9 51.7	+27.6	88.4	9 53.3	+28.5	88.6	9 54.7	+29.5	88.8	6
7	10 03.9	+22.6	86.6	10 07.4	+23.6	86.8	10 10.6	+24.6	87.0	10 13.7	+25.5	87.1	10 16.6	+26.5	87.3	10 19.3	+27.5	87.5	10 21.8	+28.4	87.7	10 24.2	+29.3	87.9	7
8	10 26.5	+22.5	85.7	10 31.0	+23.4	85.9	10 35.2	+24.4	86.0	10 39.2	+25.4	86.2	10 43.1	+26.3	86.4	10 46.8	+27.2	86.6	10 50.2	+28.2	86.8	10 53.5	+29.1	87.0	8
9	10 49.0	+22.2	84.7	10 54.4	+23.2	84.9	10 59.6	+24.2	85.1	11 04.6	+25.2	85.3	11 09.4	+26.2	85.5	11 14.0	+27.1	85.7	11 18.4	+28.1	85.9	11 22.6	+29.0	86.1	9
10	11 11.2	+22.1	83.8	11 17.6	+23.1	84.0	11 23.8	+24.1	84.2	11 29.8	+25.0	84.4	11 35.6	+25.9	84.6	11 41.1	+27.0	84.8	11 46.5	+27.9	85.0	11 51.6	+28.8	85.2	10
11	11 33.3	+21.9	82.8	11 40.7	+22.9	83.0	11 47.9	+23.8	83.2	11 54.8	+24.8	83.5	12 01.5	+25.8	83.7	12 08.1	+26.7	83.9	12 14.4	+27.7	84.1	12 20.4	+28.7	84.3	11
12	11 55.2	+21.7	81.9	12 03.6	+22.7	82.1	12 11.7	+23.7	82.3	12 19.6	+24.7	82.5	12 27.3	+25.6	82.7	12 34.8	+26.6	83.0	12 42.1	+27.5	83.2	12 49.1	+28.4	83.4	12
13	12 16.9	+21.5	80.9	12 26.3	+22.5	81.1	12 35.4	+23.5	81.4	12 44.3	+24.4	81.6	12 52.9	+25.5	81.8	13 01.4	+26.3	82.0	13 09.6	+27.3	82.3	13 17.5	+28.3	82.5	13
14	12 38.4	+21.3	80.0	12 48.8	+22.2	80.2	12 58.9	+23.2	80.4	13 08.7	+24.3	80.6	13 18.4	+25.2	80.9	13 27.7	+26.2	81.1	13 36.9	+27.1	81.4	13 45.8	+28.1	81.6	14
15	12 59.7	+21.1	79.0	13 11.0	+22.1	79.2	13 22.1	+23.1	79.5	13 33.0	+24.0	79.7	13 43.6	+25.0	79.9	13 53.9	+26.0	80.2	14 04.0	+26.9	80.4	14 13.9	+27.8	80.7	15
16	13 20.8	+20.8	78.1	13 33.1	+21.9	78.3	13 45.2	+22.8	78.5	13 57.0	+23.8	78.8	14 08.6	+24.7	79.0	14 19.9	+25.7	79.3	14 30.9	+26.7	79.5	14 41.7	+27.7	79.8	16
17	13 41.7	+20.6	77.1	13 55.0	+21.6	77.3	14 08.0	+22.6	77.6	14 20.8	+23.6	77.8	14 33.3	+24.6	78.1	14 45.6	+25.5	78.3	14 57.6	+26.5	78.6	15 09.4	+27.4	78.8	17
18	14 02.3	+20.5	76.1	14 16.6	+21.4	76.4	14 30.6	+22.4	76.6	14 44.4	+23.3	76.9	15 57.9	+24.3	77.1	15 11.1	+25.3	77.4	15 24.1	+26.2	77.7	15 36.8	+27.2	77.9	18
19	14 22.8	+20.1	75.1	14 38.0	+21.2	75.4	15 07.7	+23.1	75.9	15 19.7	+24.1	76.2	15 36.4	+25.0	76.4	15 50.3	+26.0	76.7	16 04.0	+26.9	77.0	19			
20	14 42.9	+20.0	74.2	14 59.2	+20.9	74.4	15 15.1	+21.9	74.7	15 30.8	+22.9	75.0	15 46.3	+23.8	75.2	16 01.4	+24.8	75.5	16 16.3	+25.8	75.8	16 30.9	+26.7	76.1	20
21	15 02.9	+19.7	73.2	15 20.1	+20.6	73.5	15 37.0	+21.7	73.7	15 53.7	+22.6	74.0	16 10.1	+23.6	74.3	16 26.2	+24.6	74.6	16 42.1	+25.5	74.8	16 57.6	+26.4	75.1	21
22	15 22.6	+19.4	72.2	15 40.7	+20.4	72.5	15 58.7	+21.3	72.8	16 16.3	+22.4	73.0	16 33.7	+23.3	73.3	16 50.8	+24.2	73.6	17 07.6	+25.2	73.9	17 24.0	+26.2	74.2	22
23	15 42.0	+19.1	71.2	16 01.1	+20.2	71.5	16 20.0	+21.1	71.8	16 38.7	+22.0	72.1	16 57.0	+23.0	72.4	17 15.0	+24.0	72.6	17 32.8	+24.9	72.9	17 50.2	+25.9	73.3	23
24	16 01.1	+18.9	70.3	16 21.3	+19.8	70.5	16 41.1	+20.9	70.8	17 00.7	+21.8	71.1	17 20.0	+22.8	71.4	17 39.0	+23.7	71.7	17 57.7	+24.7	72.0	18 16.1	+25.6	72.3	24
25	16 20.0	+18.7	69.3	16 41.1	+19.6	69.5	17 02.0	+20.5	69.8	17 22.5	+21.5	70.1	17 42.8	+22.5	70.4	18 02.7	+23.5	70.7	18 22.4	+24.4	71.0	18 41.7	+25.4	71.3	25
26	16 38.7	+18.3	68.3	17 00.7	+19.3	68.6	17 22.5	+20.3	68.8	17 44.0	+21.3	69.1	18 05.3	+22.3	69.4	18 26.2	+23.1	69.8	18 46.8	+24.1	70.1	19 07.1	+25.0	70.4	26
27	16 57.0	+18.0	67.3	17 20.0	+19.0	67.6	17 42.8	+19.9	67.9	18 05.3	+20.9	68.2	18 27.4	+21.9	68.5	18 49.3	+22.8	68.8	19 10.9	+23.7	69.1	19 32.1	+24.7	69.4	27
28	17 15.0	+17.8	66.3	17 39.0	+18.7	66.6	18 02.7	+19.7	66.9	18 26.2	+20.6	67.2	18 49.3	+21.6	67.5	19 12.1	+22.5	67.8	19 34.6	+23.5	68.1	19 56.8	+24.4	68.5	28
29	17 32.8	+17.4	65.3	17 57.7	+18.4	65.6	18 22.4	+19.3	65.9	18 46.8	+20.3	66.2	19 10.9	+21.2	66.5	19 34.6	+22.2	66.8	19 58.1	+23.1	67.1	20 21.2	+24.1	67.5	29
30	17 50.2	+17.2	64.3	18 16.1	+18.1	64.6	18 41.7	+19.1	64.9	19 07.1	+20.0	65.2	19 32.1	+20.9	65.5	19 56.8	+21.9	65.8	20 21.2	+22.9	66.2	20 45.3	+23.8	66.5	30
31	18 07.4	+16.8	63.3	18 34.2	+17.8	63.6	19 00.8	+18.7	63.9	19 27.1	+19.6	64.2	19 53.0	+20.6	64.5	20 18.7	+21.5	64.8	20 44.1	+22.4	65.2	21 09.1	+23.4	65.5	31
32	18 24.2	+16.5	62.3	18 52.0	+17.4	62.6	19 19.5	+18.4	62.9	19 46.7	+19.3	63.2	20 13.6	+20.3	63.5	20 40.2	+21.2	63.8	21 06.5	+22.1	64.2	21 32.5	+23.0	64.5	32
33	18 40.7	+16.2	61.2	19 09.4	+17.1	61.5	19 37.9	+18.0	61.9	20 06.0	+19.0	62.2	20 33.9	+19.9	62.5	21 01.4	+20.8	62.8	21 28.6	+21.8	63.2	21 55.5	+22.7	63.5	33
34	18 56.9	+15.8	60.2	19 26.5	+16.8	60.5	20 13.6	+17.3	60.8	20 43.6	+18.2	61.1	22 11.3	+19.2	60.5	21 42.7	+20.1	60.8	22 11.8	+21.0	61.2	22 40.6	+21.9	61.5	34
35	19 12.7	+15.5	59.2	19 43.3	+16.4	59.5	20 13.6	+17.3	59.8	20 43.6	+18.2	60.1	21 13.3	+19.2	60.5	21 42.7	+20.1	60.8	22 11.8	+21.0	61.2	22 40.6	+21.9	61.5	35
36	19 28.2	+15.1	58.2	19 59.7	+16.0	58.5	20 30.9	+17.0	58.8	21 01.8	+17.9	59.1	21 32.5	+18.8	59.5	22 02.8	+19.7	59.8	22 32.8	+20.7	60.2	23 02.5	+21.6	60.5	36
37	19 43.3	+14.8	57.2	20 15.7	+15.7	57.5	20 47.9	+16.4	57.8	21 19.7	+17.5	58.1	21 51.3	+18.4	58.4	22 22.5	+19.4	58.8	22 53.5	+20.2	59.1	23 24.1	+21.1	59.5	37

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 82°, 278°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	7	21.6	-23.7	93.1	7	18.3	-24.7	93.3	7	14.8	-25.6	93.4	7	11.2	-26.6	93.5	7	07.4	-27.5	93.7	7	03.5	-28.4	93.8	6	59.5	-29.4	93.9	6	55.4	-30.3	94.0	0
1	6	57.9	-23.8	94.1	6	53.6	-24.8	94.2	6	49.2	-25.8	94.3	6	44.6	-26.7	94.4	6	39.9	-27.6	94.5	6	35.1	-28.5	94.7	6	30.1	-29.4	94.8	6	25.1	-30.4	94.9	1
2	6	34.1	-23.9	95.0	6	28.8	-24.8	95.1	6	23.4	-25.8	95.2	6	17.9	-26.7	95.3	6	12.3	-27.7	95.4	6	06.6	-28.7	95.5	6	00.7	-29.5	95.7	5	54.7	-30.4	95.8	2
3	6	10.2	-24.0	95.9	6	04.0	-25.0	96.0	5	57.6	-25.9	96.1	5	51.2	-26.9	96.2	5	44.6	-27.8	96.3	5	37.9	-28.7	96.4	5	31.2	-29.6	96.5	5	24.3	-30.5	96.6	3
4	5	46.2	-24.1	96.8	5	39.0	-25.0	96.9	5	31.7	-26.0	97.0	5	24.3	-26.9	97.1	5	16.8	-27.8	97.2	5	09.2	-28.7	97.3	5	01.6	-29.7	97.4	4	53.8	-30.6	97.5	4
5	5	22.1	-24.1	97.8	5	14.0	-25.1	97.9	5	05.7	-26.0	97.9	4	57.4	-27.0	98.0	4	49.0	-27.9	98.1	4	40.5	-28.9	98.2	4	31.9	-29.8	98.3	4	23.2	-30.6	98.4	5
6	4	58.0	-24.3	98.7	4	48.9	-25.2	98.8	4	39.7	-26.1	98.8	4	30.4	-27.0	98.9	4	21.1	-28.0	99.0	4	11.6	-28.8	99.1	4	02.1	-29.7	99.1	3	52.6	-30.7	99.2	6
7	4	33.7	-24.3	99.6	4	23.7	-25.3	99.7	4	13.6	-26.2	99.7	4	03.4	-27.2	99.8	3	53.1	-28.0	99.9	3	42.8	-29.0	100.0	3	32.4	-29.9	100.0	3	21.9	-30.7	100.1	7
8	4	09.4	-24.4	100.5	3	58.4	-25.3	100.6	3	47.4	-26.3	100.6	3	36.2	-27.1	100.7	3	25.1	-28.1	100.8	3	13.8	-29.0	100.8	3	02.5	-29.9	100.9	8				
9	3	45.0	-24.4	101.4	3	33.1	-25.4	101.5	3	21.1	-26.3	101.5	3	09.1	-27.2	101.6	2	57.0	-28.1	101.7	2	44.8	-29.0	101.8	2	20.4	-30.8	101.8	9				
10	3	20.6	-24.5	102.3	3	07.7	-25.4	102.4	2	54.8	-26.3	102.4	2	41.9	-27.3	102.5	2	28.9	-28.2	102.5	2	15.8	-29.1	102.6	2	02.7	-29.9	102.6	10				
11	2	56.1	-24.5	103.3	2	42.3	-25.5	103.3	2	28.5	-26.4	103.3	2	14.6	-27.3	103.4	2	00.7	-28.2	103.4	1	46.7	-29.0	103.5	1	18.8	-30.9	103.5	11				
12	2	31.6	-24.6	104.2	2	16.8	-25.4	104.2	2	02.1	-26.4	104.2	1	47.3	-27.3	104.3	1	32.5	-28.2	104.3	1	17.7	-29.1	104.3	0	47.9	-30.8	104.4	12				
13	2	07.0	-24.6	105.1	1	51.4	-25.6	105.1	1	20.0	-27.3	105.2	1	04.3	-28.2	105.2	0	48.6	-29.2	105.2	0	32.8	-30.0	105.2	0	17.1	-30.9	105.2	13				
14	1	42.4	-24.6	106.0	1	25.8	-25.5	106.0	1	09.3	-26.5	106.0	0	52.7	-27.4	106.1	0	36.1	-28.3	106.1	0	02.8	-30.0	106.1	0	13.8	+30.9	73.9	14				
15	1	17.8	-24.7	106.9	1	00.3	-25.6	106.9	0	42.8	-26.4	106.9	0	25.3	-27.3	107.0	0	07.8	-28.2	107.0	0	09.7	+29.1	73.0	0	27.2	+29.9	73.0	15				
16	0	53.1	-24.7	107.8	0	34.7	-25.5	107.8	0	16.4	-26.5	107.8	0	10.1	+26.5	71.3	0	20.4	+2.74	72.2	0	38.8	+29.1	72.2	1	51.5	+30.8	72.2	16				
17	0	28.4	-24.6	108.7	0	09.2	-25.6	108.7	0	16.4	+26.5	70.4	0	56.7	+27.3	70.4	1	16.9	+28.2	70.4	1	37.0	+29.0	70.4	2	17.1	+30.8	70.5	18				
18	0	03.8	-24.7	109.6	0	16.4	+26.5	70.4	0	10.1	+26.5	69.5	1	24.0	+27.4	69.5	1	45.1	+28.1	69.5	2	06.0	+29.1	69.5	2	27.0	+29.9	69.6	19				
19	0	20.9	+24.7	69.4	0	42.0	+25.5	69.5	1	03.0	+26.5	69.5	1	24.0	+27.4	69.5	1	45.1	+28.1	69.5	2	06.0	+29.1	69.5	2	47.9	+30.7	69.6	19				
20	0	45.6	+24.6	68.5	1	07.5	+25.6	68.5	1	29.5	+26.4	68.6	1	51.4	+27.2	68.6	2	13.2	+28.2	68.6	2	35.1	+29.0	68.7	2	56.9	+29.8	68.7	3	18.6	+30.7	68.8	20
21	1	10.2	+24.7	67.6	1	33.1	+25.5	67.6	1	55.9	+26.3	67.7	2	18.6	+27.3	67.7	2	41.4	+28.1	67.7	3	04.1	+28.9	67.8	3	26.7	+29.8	67.8	3	49.3	+30.7	67.9	21
22	1	34.9	+24.6	66.7	1	58.6	+25.5	66.7	2	22.2	+26.4	66.8	2	45.9	+27.2	66.8	3	09.5	+28.1	66.9	3	33.0	+29.0	66.9	3	56.5	+29.8	67.0	22				
23	1	59.5	+24.6	65.8	2	24.1	+25.4	65.8	2	48.6	+26.3	65.9	3	13.1	+27.2	65.9	3	37.6	+28.0	66.0	4	02.0	+28.8	66.0	4	26.3	+29.7	66.1	4	50.6	+30.5	66.2	23
24	2	24.1	+24.5	64.9	2	49.5	+25.4	64.9	3	14.9	+26.3	65.0	3	40.3	+27.1	65.0	4	05.6	+27.9	65.1	4	30.8	+28.8	65.2	5	21.1	+30.4	65.3	24				
25	2	48.6	+24.5	64.0	3	14.9	+25.4	64.0	3	41.2	+26.2	64.1	4	07.4	+27.0	64.1	4	33.5	+27.9	64.2	4	59.6	+28.7	64.3	5	25.6	+29.5	64.4	5	51.5	+30.4	64.4	25
26	3	13.1	+24.5	63.1	3	40.3	+25.3	63.1	4	07.4	+26.1	63.2	4	34.4	+27.0	63.3	5	01.4	+27.8	63.3	5	28.3	+28.7	63.4	5	55.1	+29.5	63.5	26				
27	3	37.6	+24.4	62.1	4	05.6	+25.2	62.2	4	33.5	+26.1	62.3	5	01.4	+26.9	62.3	5	29.2	+27.8	62.4	5	57.0	+28.5	62.5	6	52.2	+30.1	62.7	27				
28	4	02.0	+24.3	61.2	4	30.8	+25.2	61.3	4	59.6	+26.0	61.4	5	28.3	+26.8	61.4	5	57.0	+27.6	61.5	6	54.0	+29.2	61.7	7	22.3	+30.1	61.8	28				
29	4	26.3	+24.3	60.3	4	56.0	+25.1	60.4	5	25.6	+25.9	60.5	6	24.6	+27.6	60.6	6	54.0	+28.3	60.7	7	23.2	+29.2	60.9	7	52.4	+30.0	61.0	29				
30	4	50.6	+24.2	59.4	5	21.1	+25.0	59.5	5	51.5	+25.9	59.6	6	21.9	+26.6	59.6	6	52.2	+27.4	59.7	7	52.4	+29.1	60.0	8	22.4	+29.8	60.1	30				
31	5	14.8	+24.1	58.5	5	46.1	+24.9	58.6	6	17.4	+25.7	58.6	6	48.5	+26.5	58.7	7	19.6	+27.4	58.8	7	50.6	+28.1	59.0	8	8.5	+29.8	59.2	31				
32	5	38.9	+24.0	57.6	6	11.0	+24.9	57.6	6	43.1	+25.6	57.7	7	47.0	+27.2	58.0	8	18.7	+28.1	58.1	8	50.4	+28.8	58.2	9	22.0	+29.6	58.3	32				
33	6	02.9	+23.9	56.6	6	35.9	+24.7	56.7	7	08.7	+25.6	56.8	7	41.5	+26.3	56.9	8	14.2	+27.1	57.1	9	19.2	+28.7	57.3	9	51.6	+29.4	57.5	33				
34	6	26.8	+23.9	55.7	7	70.8	+25.4	55.8	7	59.7	+25.3	55.9	8	07.8	+26.2	56.0	9	14.7	+27.0	56.2	9	47.9	+28.6	56.4	10	21.0	+29.4	56.6	34				
35	6	50.7	+23.7	54.8	7	59.7	+25.3	55.0	8	34.0	+26.1	55.1	9	08.3	+26.9	55.2	9	42.4	+27.7	55.4	10	16.5	+28.4	55.5	10	50.4	+29.1	55.7	35				
36	7	14.4	+23.6	53.9	7	49.7	+24.4	54.0	8	25.0	+25.1	54.1	9	00.1	+26.0	54.2	9	35.2	+26.7	54.3	10	10.1	+27.5	54.5	10	44.9	+28.2	54.6	11	19.5	+29.0	54.8	36
37	7	38.0	+23.5	52.9	8	14.1	+24.																										

83°, 277° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z																						
0	6 26.5	+23.5	92.7	6 23.5	+24.5	92.9	6 20.5	+25.4	93.0	6 17.3	+26.4	93.1	6 14.0	+27.4	93.2	6 10.6	+28.3	93.3	6 07.1	+29.2	93.4	6 03.5	+30.1	93.5	0
1	6 50.0	+23.4	91.8	6 48.0	+24.4	91.9	6 45.9	+25.4	92.1	6 43.7	+26.3	92.2	6 41.4	+27.2	92.3	6 38.9	+28.2	92.4	6 36.3	+29.2	92.5	6 33.6	+30.1	92.6	1
2	7 13.4	+23.4	90.9	7 12.4	+24.3	91.0	7 11.3	+25.3	91.1	7 10.0	+26.2	91.3	7 08.6	+27.2	91.4	7 07.1	+28.1	91.5	7 05.5	+29.0	91.6	7 03.7	+29.9	91.8	2
3	7 36.8	+23.2	90.0	7 36.7	+24.2	90.1	7 36.6	+25.1	90.2	7 36.2	+26.1	90.4	7 35.8	+27.0	90.5	7 35.2	+28.0	90.6	7 34.5	+28.9	90.8	7 33.6	+29.8	90.9	3
4	8 00.0	+23.0	89.0	8 00.9	+24.1	89.2	8 01.7	+25.0	89.3	8 02.3	+26.0	89.5	8 02.8	+27.0	89.6	8 03.2	+27.9	89.7	8 03.4	+28.8	89.9	8 03.4	+29.8	90.0	4
5	8 23.0	+23.0	88.1	8 25.0	+23.9	88.2	8 26.7	+24.9	88.4	8 28.3	+25.9	88.5	8 29.8	+26.8	88.7	8 31.1	+27.7	88.8	8 32.2	+28.7	89.0	8 33.2	+29.6	89.1	5
6	8 46.0	+22.8	87.2	8 48.9	+23.8	87.3	8 51.6	+24.8	87.5	8 54.2	+25.7	87.6	8 56.6	+26.6	87.8	8 58.8	+27.6	87.9	9 00.9	+28.5	88.1	9 02.8	+29.4	88.3	6
7	9 08.8	+22.7	86.2	9 12.7	+23.6	86.4	9 16.4	+24.6	86.6	9 19.9	+25.6	86.7	9 23.2	+26.6	86.9	9 26.4	+27.5	87.0	9 29.4	+28.4	87.2	9 32.2	+29.4	87.4	7
8	9 31.5	+22.5	85.3	9 36.3	+23.5	85.5	9 41.0	+24.4	85.6	9 45.5	+25.4	85.8	9 49.8	+26.3	86.0	9 53.9	+27.3	86.1	9 57.8	+28.3	86.3	10 01.6	+29.2	86.5	8
9	9 54.0	+22.3	84.4	9 59.8	+23.3	84.5	10 05.4	+24.3	84.7	10 10.9	+25.2	84.9	10 16.1	+26.3	85.1	10 21.2	+27.2	85.2	10 26.1	+28.1	85.4	10 30.8	+29.0	85.6	9
10	10 16.3	+22.2	83.4	10 23.1	+23.2	83.6	10 29.7	+24.2	83.8	10 36.1	+25.2	84.0	10 42.4	+26.0	84.1	10 48.4	+27.0	84.3	10 54.2	+28.0	84.5	10 59.8	+28.9	84.7	10
11	10 38.5	+22.1	82.5	10 46.3	+23.0	82.7	10 53.9	+24.0	82.8	11 01.3	+24.9	83.0	11 08.4	+25.9	83.2	11 15.4	+26.9	83.4	11 22.2	+27.8	83.6	11 28.7	+28.8	83.8	11
12	11 00.6	+21.8	81.5	11 09.3	+22.8	81.7	11 17.9	+23.8	81.9	11 26.2	+24.8	82.1	11 34.3	+25.8	82.3	11 42.3	+26.6	82.5	11 50.0	+27.6	82.7	11 57.5	+28.5	82.9	12
13	11 22.4	+21.7	80.6	11 32.1	+22.7	80.8	11 41.7	+23.6	81.0	11 51.0	+24.5	81.2	12 00.1	+25.5	81.4	12 08.9	+26.5	81.6	12 17.6	+27.4	81.8	12 26.0	+28.4	82.0	13
14	11 44.1	+21.4	79.6	11 54.8	+22.4	79.8	12 05.3	+23.4	80.0	12 15.5	+24.4	80.2	12 25.6	+25.4	80.5	12 35.4	+26.3	80.7	12 45.0	+27.3	80.9	12 54.4	+28.2	81.1	14
15	12 05.5	+21.3	78.7	12 17.2	+22.3	78.9	12 28.7	+23.2	79.1	12 39.9	+24.2	79.3	12 51.0	+25.1	79.5	13 01.7	+26.2	79.8	13 12.3	+27.1	80.0	13 22.6	+28.0	80.2	15
16	12 26.8	+21.1	77.7	12 39.5	+22.0	77.9	12 51.9	+23.1	78.1	13 04.1	+24.0	78.4	13 16.1	+25.0	78.6	13 27.9	+25.9	78.8	13 39.4	+26.8	79.1	13 50.6	+27.8	79.3	16
17	12 47.9	+20.9	76.7	13 01.5	+21.9	77.0	13 15.0	+22.8	77.2	13 28.1	+23.8	77.4	13 41.1	+24.7	77.7	13 53.8	+25.7	77.9	14 06.2	+26.7	78.1	14 18.4	+27.6	78.4	17
18	13 08.8	+20.6	75.8	13 23.4	+21.6	76.0	13 37.8	+22.6	76.2	13 51.9	+23.6	76.5	14 05.8	+24.5	76.7	14 19.5	+25.4	77.0	14 32.9	+26.4	77.2	14 46.0	+27.4	77.5	18
19	13 29.4	+20.4	74.8	13 45.0	+21.4	75.1	14 00.4	+22.3	75.3	14 15.5	+23.3	75.5	14 30.3	+24.3	75.8	14 44.9	+25.3	76.0	14 59.3	+26.2	76.3	15 13.4	+27.1	76.6	19
20	13 49.8	+20.2	73.9	14 06.4	+21.2	74.1	14 22.7	+22.2	74.3	14 38.8	+23.1	74.6	14 54.6	+24.1	74.8	15 10.2	+25.0	75.1	15 25.5	+26.0	75.4	15 40.5	+26.9	75.6	20
21	14 10.0	+20.0	72.9	14 27.6	+20.9	73.1	14 44.9	+21.9	73.4	15 01.9	+22.9	73.6	15 18.7	+23.8	73.9	15 35.2	+24.8	74.2	15 51.5	+25.7	74.4	16 07.4	+26.7	74.7	21
22	14 30.0	+19.7	71.9	14 48.5	+20.7	72.2	15 06.8	+21.6	72.4	15 24.8	+22.6	72.7	15 42.5	+23.6	72.9	16 00.0	+24.5	73.2	16 17.2	+25.5	73.5	16 34.1	+26.4	73.8	22
23	14 49.7	+19.5	70.9	15 09.2	+20.5	71.2	15 28.4	+21.4	71.4	15 47.4	+22.4	71.7	16 06.1	+23.3	72.0	16 24.5	+24.3	72.3	16 42.7	+25.2	72.5	17 00.5	+26.2	72.8	23
24	15 09.2	+19.2	70.0	15 29.7	+20.1	70.2	15 49.8	+21.2	70.5	16 09.8	+22.1	70.7	16 29.4	+23.1	71.0	16 48.8	+24.0	71.3	17 07.9	+24.9	71.6	17 26.7	+25.9	71.9	24
25	15 28.4	+19.0	69.0	15 49.8	+20.0	69.2	16 11.0	+20.9	69.5	16 31.9	+21.8	69.8	16 52.5	+22.8	70.1	17 12.8	+23.7	70.3	17 32.8	+24.7	70.6	17 52.6	+25.6	70.9	25
26	15 47.4	+18.7	68.0	16 09.8	+19.6	68.2	16 31.9	+20.6	68.5	16 53.7	+21.6	68.8	17 15.3	+22.5	69.1	17 36.5	+23.5	69.4	17 57.5	+24.4	69.7	18 18.2	+25.3	70.0	26
27	16 06.1	+18.4	67.0	16 29.4	+19.4	67.3	16 52.5	+20.3	67.5	17 15.3	+21.2	67.8	17 37.8	+22.2	68.1	18 00.0	+23.1	68.4	18 21.9	+24.1	68.7	18 43.5	+25.1	69.0	27
28	16 24.5	+18.2	66.0	16 48.8	+19.1	66.3	17 12.8	+20.0	66.6	17 36.5	+21.0	66.8	18 00.0	+21.9	67.1	18 23.1	+22.9	67.4	18 46.0	+23.8	67.8	19 08.6	+24.7	68.1	28
29	16 42.7	+17.8	65.0	17 07.9	+18.8	65.3	17 32.8	+19.8	65.6	17 57.5	+20.7	65.9	18 21.9	+21.6	66.2	18 46.0	+22.6	66.5	19 09.8	+23.5	66.8	19 33.3	+24.4	67.1	29
30	17 00.5	+17.6	64.0	17 26.7	+18.5	64.3	17 52.6	+19.4	64.6	18 18.2	+20.4	64.9	18 43.5	+21.3	65.2	19 08.6	+22.2	65.5	19 33.3	+23.2	65.8	19 57.7	+24.2	66.1	30
31	17 18.1	+17.3	63.0	17 45.2	+18.2	63.3	18 12.0	+19.1	63.6	18 38.6	+20.0	63.9	19 04.8	+21.0	64.2	19 30.8	+21.9	64.5	19 56.5	+22.8	64.8	20 21.9	+23.7	65.2	31
32	17 35.4	+16.9	62.0	18 03.4	+17.9	62.3	18 31.1	+18.9	62.6	18 58.6	+19.8	62.9	19 25.8	+20.7	63.1	20 17.2	+21.6	63.5	20 19.3	+22.6	63.8	20 45.6	+23.5	64.2	32
33	17 52.3	+16.7	61.0	18 21.3	+17.5	61.3	18 50.0	+18.5	61.6	19 18.4	+19.4	61.9	19 46.5	+20.3	62.2	20 14.3	+21.3	62.5	20 41.9	+22.2	62.9	21 09.1	+23.1	63.2	33
34	18 09.0	+16.3	60.0	18 38.8	+17.3	60.3	19 08.6	+18.1	60.5	21 27.7	+17.4	60.8	22 01.5	+18.7	61.1	22 35.6	+18.7	61.4	23 09.5	+19.6	61.7	23 43.1	+20.5	62.1	34
35	18 25.3	+16.0	59.0	18 56.1	+16.9	59.3	19 26.6	+17.8	59.6	19 56.9	+18.7	59.9	20 26.8	+19.7	60.2	20 56.5	+20.6	60.5	21 25.9	+21.5	60.9	21 54.9	+22.4	61.2	35
36	18 41.3	+15.7	58.0	19 13.0	+16.6	58.3	19 44.4	+17.5	58.6	20 15.6	+18.4	58.9	20 46.5	+19.3	59.2	21 17.1	+20.2	59.5	21 47.4	+21.1	59.9	22 17.3	+22.1	60.2	36
37	18 57.0	+15.3	56.9	19 29.6	+16.2	57.2	20 01.9	+17.2	57.5	20 34.0	+18.0	57.8	21 05.8	+18.9	58.2	21 37.3	+19.8	58.5	22 08.5	+20.7	58.8	22 39.4	+21.6		

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 83°, 277°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	6 26.5 -23.7	92.7	6 23.5 -24.6	92.9	6 20.5 -25.6	93.0	6 17.3 -26.5	93.1	6 14.0 -27.4	93.2	6 10.6 -28.3	93.3	6 07.1 -29.3	93.4	6 03.5 -30.2	93.5	6 03.5 -30.2	93.5	6 03.5 -30.2	93.5	6 03.5 -30.2	93.5	0		
1	6 02.8 -23.7	93.7	5 58.9 -24.7	93.8	5 54.9 -25.6	93.9	5 50.8 -26.6	94.0	5 46.6 -27.5	94.1	5 42.3 -28.5	94.2	5 37.8 -29.3	94.3	5 33.3 -30.3	94.4	5 33.3 -30.3	94.4	5 33.3 -30.3	94.4	5 33.3 -30.3	94.4	1		
2	5 39.1 -23.8	94.6	5 34.2 -24.8	94.7	5 29.3 -25.8	94.8	5 24.2 -26.7	94.9	5 19.1 -27.7	95.0	5 13.8 -28.5	95.1	5 08.5 -29.5	95.2	5 03.0 -30.3	95.2	5 03.0 -30.3	95.2	5 03.0 -30.3	95.2	5 03.0 -30.3	95.2	2		
3	5 15.3 -23.9	95.5	5 09.4 -24.8	95.6	5 03.5 -25.8	95.7	4 57.5 -26.7	95.8	4 51.4 -27.6	95.9	4 45.3 -28.6	96.0	4 39.0 -29.5	96.0	4 32.7 -30.5	96.1	4 32.7 -30.5	96.1	4 32.7 -30.5	96.1	4 32.7 -30.5	96.1	3		
4	4 51.4 -24.0	96.4	4 44.6 -24.9	96.5	4 37.7 -25.8	96.6	4 30.8 -26.8	96.7	4 23.8 -27.8	96.8	4 16.7 -28.7	96.8	4 09.5 -29.6	96.9	4 02.2 -30.4	97.0	4 02.2 -30.4	97.0	4 02.2 -30.4	97.0	4 02.2 -30.4	97.0	4		
5	4 27.4 -24.1	97.4	4 19.7 -25.0	97.4	4 11.9 -26.0	97.5	4 04.0 -26.9	97.6	3 56.0 -27.8	97.6	3 48.0 -28.7	97.7	3 39.9 -29.6	97.8	3 31.8 -30.5	97.8	3 31.8 -30.5	97.8	3 31.8 -30.5	97.8	3 31.8 -30.5	97.8	5		
6	4 03.3 -24.1	98.3	3 54.7 -25.1	98.3	3 45.9 -26.0	98.4	3 37.1 -26.9	98.5	3 28.2 -27.8	98.5	3 19.3 -28.8	98.6	3 10.3 -29.7	98.7	3 01.3 -30.6	98.7	3 01.3 -30.6	98.7	3 01.3 -30.6	98.7	3 01.3 -30.6	98.7	6		
7	3 39.2 -24.1	99.2	3 29.6 -25.1	99.3	3 19.9 -26.0	99.3	3 10.2 -27.0	99.4	3 00.4 -27.9	99.4	2 50.5 -28.8	99.5	2 40.6 -29.7	99.5	2 30.7 -30.6	99.6	2 30.7 -30.6	99.6	2 30.7 -30.6	99.6	2 30.7 -30.6	99.6	7		
8	3 15.1 -24.3	100.1	3 04.5 -25.2	100.2	2 53.9 -26.1	100.2	2 43.2 -27.0	100.3	2 32.5 -27.9	100.3	2 21.7 -28.8	100.4	2 10.9 -29.7	100.4	2 00.1 -30.6	100.4	2 00.1 -30.6	100.4	2 00.1 -30.6	100.4	2 00.1 -30.6	100.4	8		
9	2 50.8 -24.2	101.0	2 39.3 -25.2	101.1	2 27.8 -26.1	101.1	2 16.2 -27.0	101.2	2 04.6 -28.0	101.2	1 52.9 -28.9	101.2	1 41.2 -29.7	101.3	1 29.5 -30.7	101.3	1 29.5 -30.7	101.3	1 29.5 -30.7	101.3	1 29.5 -30.7	101.3	9		
10	2 26.6 -24.3	101.9	2 14.1 -25.2	102.0	2 01.7 -26.2	102.0	1 49.2 -27.1	102.1	1 36.6 -28.0	102.1	1 24.0 -28.8	102.1	1 11.5 -29.8	102.1	0 58.8 -30.6	102.1	0 58.8 -30.6	102.1	0 58.8 -30.6	102.1	0 58.8 -30.6	102.1	10		
11	2 02.3 -24.3	102.9	1 48.9 -25.2	102.9	1 35.5 -26.2	102.9	1 22.1 -27.1	102.9	1 08.6 -28.0	103.0	0 55.2 -28.9	103.0	0 41.7 -29.8	103.0	0 28.2 -30.7	103.0	0 28.2 -30.7	103.0	0 28.2 -30.7	103.0	0 28.2 -30.7	103.0	11		
12	1 38.0 -24.4	103.8	1 23.7 -25.3	103.8	1 09.3 -26.1	103.8	0 55.0 -27.1	103.8	0 40.6 -28.0	103.9	0 26.3 -28.9	103.9	0 11.9 -29.8	103.9	0 02.5 -30.6	103.9	0 02.5 -30.6	103.9	0 02.5 -30.6	103.9	0 02.5 -30.6	103.9	12		
13	1 13.6 -24.4	104.7	0 58.4 -25.3	104.7	0 43.2 -26.3	104.7	0 27.9 -27.1	104.7	0 12.6 -28.0	104.7	0 02.6 -28.0	104.7	0 02.6 -28.0	104.7	0 02.6 -28.0	104.7	0 02.6 -28.0	104.7	0 02.6 -28.0	104.7	0 02.6 -28.0	104.7	13		
14	0 49.2 -24.3	105.6	0 33.1 -25.3	105.6	0 16.9 -26.2	105.6	0 0.8 -27.1	105.6	0 15.4 +28.0	105.6	0 0.2 +28.9	105.6	0 0.2 +28.9	105.6	0 0.2 +28.9	105.6	0 0.2 +28.9	105.6	0 0.2 +28.9	105.6	0 0.2 +28.9	105.6	14		
15	0 24.9 -24.4	106.5	0 07.8 -25.3	106.5	0 0.5 -24.4	107.4	0 17.5 +25.3	72.6	0 0.9 +26.2	73.5	0 26.3 +27.1	73.5	0 43.4 +28.0	73.5	1 00.4 +28.9	73.5	1 17.4 +29.8	73.5	1 34.4 +30.6	73.6	1 34.4 +30.6	73.6	15		
16	0 00.5 -24.4	107.4	0 17.5 +25.3	72.6	0 35.5 +26.2	72.6	0 53.4 +27.1	72.6	1 11.4 +27.9	72.6	1 29.3 +28.8	72.6	1 47.2 +29.7	72.7	2 05.0 +30.6	72.7	2 05.0 +30.6	72.7	2 05.0 +30.6	72.7	2 05.0 +30.6	72.7	16		
17	0 23.9 +24.4	71.7	0 42.8 +25.3	71.7	1 01.7 +26.1	71.7	1 20.5 +27.1	71.7	1 39.3 +28.0	71.7	1 58.1 +28.9	71.8	2 16.9 +29.7	71.8	2 35.6 +30.6	71.8	2 35.6 +30.6	71.8	2 35.6 +30.6	71.8	2 35.6 +30.6	71.8	17		
18	0 48.3 +24.4	70.7	1 08.1 +25.3	70.8	1 27.8 +26.2	70.8	1 47.6 +27.0	70.8	2 07.3 +27.9	70.8	2 27.0 +28.8	70.9	2 46.6 +29.7	70.9	3 06.2 +30.5	71.0	3 06.2 +30.5	71.0	3 06.2 +30.5	71.0	3 06.2 +30.5	71.0	18		
19	1 12.7 +24.3	69.8	1 33.4 +25.2	69.9	1 54.0 +26.1	69.9	2 14.6 +27.0	69.9	2 35.2 +27.9	70.0	2 55.8 +28.7	70.0	3 16.3 +29.6	70.1	3 36.7 +30.5	70.1	3 36.7 +30.5	70.1	3 36.7 +30.5	70.1	3 36.7 +30.5	70.1	19		
20	1 37.0 +24.4	68.9	1 58.6 +25.2	68.9	2 20.1 +26.1	69.0	2 41.6 +27.0	69.0	3 03.1 +27.8	69.1	3 24.5 +28.7	69.1	3 45.9 +29.5	69.2	4 07.2 +30.4	69.2	4 07.2 +30.4	69.2	4 07.2 +30.4	69.2	4 07.2 +30.4	69.2	20		
21	2 01.4 +24.3	68.0	2 23.8 +25.2	68.0	2 46.2 +26.1	68.1	3 08.6 +26.9	68.1	3 30.9 +27.8	68.2	3 53.2 +28.7	68.2	4 15.4 +29.5	68.3	4 37.6 +30.3	68.4	4 37.6 +30.3	68.4	4 37.6 +30.3	68.4	4 37.6 +30.3	68.4	21		
22	2 25.7 +24.2	67.1	2 49.0 +25.1	67.1	3 12.3 +26.0	67.2	3 35.5 +26.9	67.2	3 58.7 +27.8	67.3	4 21.9 +28.5	67.4	4 44.9 +29.5	67.4	5 07.9 +30.3	67.5	5 07.9 +30.3	67.5	5 07.9 +30.3	67.5	5 07.9 +30.3	67.5	22		
23	2 49.9 +24.2	66.2	3 14.1 +25.1	66.2	3 38.3 +26.0	66.3	4 02.4 +26.8	66.3	4 26.5 +27.6	66.4	4 50.4 +28.6	66.5	5 14.4 +29.3	66.6	5 38.2 +30.2	66.6	5 38.2 +30.2	66.6	5 38.2 +30.2	66.6	5 38.2 +30.2	66.6	23		
24	3 14.1 +24.2	65.3	3 39.2 +25.1	65.3	4 04.3 +25.9	65.4	4 29.2 +26.8	65.4	5 21.7 +27.6	64.6	5 47.4 +28.4	64.7	6 13.0 +29.2	64.8	6 38.5 +30.0	64.9	6 38.5 +30.0	64.9	6 38.5 +30.0	64.9	6 38.5 +30.0	64.9	24		
25	3 38.3 +24.1	64.3	4 04.3 +24.9	64.4	4 30.2 +25.8	64.5	4 56.0 +26.7	64.5	5 21.7 +27.6	64.6	5 47.4 +28.4	64.7	6 13.0 +29.2	64.8	6 38.5 +30.0	64.9	6 38.5 +30.0	64.9	6 38.5 +30.0	64.9	6 38.5 +30.0	64.9	25		
26	4 02.4 +24.1	63.4	4 29.2 +24.9	63.5	4 56.0 +25.7	63.6	5 22.7 +26.6	63.6	5 49.3 +27.4	63.7	6 15.8 +28.2	63.8	6 42.2 +29.1	63.9	7 08.5 +29.9	64.0	7 08.5 +29.9	64.0	7 08.5 +29.9	64.0	7 08.5 +29.9	64.0	26		
27	4 26.5 +23.9	62.5	4 54.1 +24.9	62.6	5 21.7 +25.7	62.7	5 49.3 +26.5	62.7	6 16.7 +27.3	62.8	6 44.0 +28.2	62.9	7 11.3 +29.0	63.0	7 38.4 +29.8	63.2	7 38.4 +29.8	63.2	7 38.4 +29.8	63.2	7 38.4 +29.8	63.2	27		
28	4 50.4 +24.0	61.6	5 19.0 +24.7	61.7	5 47.4 +25.6	61.7	6 15.8 +26.4	61.8	6 44.0 +27.3	61.9	7 12.2 +28.1	62.0	7 40.3 +28.9	62.2	8 08.2 +29.7	62.3	8 08.2 +29.7	62.3	8 08.2 +29.7	62.3	8 08.2 +29.7	62.3	28		
29	5 14.4 +23.8	60.7	5 43.7 +24.7	60.7	6 13.0 +25.5	60.8	6 42.2 +26.3	60.9	7 11.3 +27.1	61.0	7 40.3 +27.9	61.2	8 09.2 +28.7	61.3	8 37.9 +29.6	61.4	8 37.9 +29.6	61.4	8 37.9 +29.6	61.4	8 37.9 +29.6	61.4	29		
30	5 38.2 +23.7	59.7	6 08.4 +24.5	59.8	6 38.5 +25.4	59.9	7 08.5 +26.2	60.0	7 38.4 +27.1	60.1	8 08.2 +27.9	60.3	8 37.9 +28.7	60.4	9 07.5 +29.5	60.5	9 07.5 +29.5	60.5	9 07.5 +29.5	60.5	9 07.5 +29.5	60.5	30		
31	6 01.9 +23.7	58.8	6 32.9 +24.5	58.9	7 03.9 +25.3	59.0	7 34.7 +26.1	59.1	8 05.5 +26.9	59.2	8 36.1 +27.7	59.4	9 06.6 +28.5	59.5	9 37.0 +29.3	59.6	9 37.0 +29.3	59.6	9 37.0 +29.3	59.6	9 37.0 +29.3	59.6	31		
32	6 25.6 +23.5	57.9	6 57.4 +24.4	58.0	7 29.2 +25.1	58.1	8 00.8 +26.0	58.2	8 32.4 +26.8	58.3	9 03.8 +27.6	58.5	9 35.1 +28.4	58.6	10 06.3 +29.2	58.7	10 06.3 +29.2	58.7	10 06.3 +29.2	58.7	10 06.3 +29.2	58.7	32		
33	6 49.1 +23.4																								

84°, 276° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.
0	5 31.3 +23.5	92.4	5 28.8 +24.4	92.4	5 26.2 +25.4	92.5	5 23.5 +26.3	92.6	5 20.6 +27.4	92.7	5 17.7 +28.3	92.8	5 14.7 +29.2	92.9	5 11.6 +30.1	93.0	5 8.6 +31.0	93.0	0	5 11.6 +30.1	93.0	5 41.2 +29.6	88.6	5	
1	5 54.8 +23.4	91.4	5 53.2 +24.4	91.5	5 51.6 +25.3	91.6	5 49.8 +26.3	91.7	5 48.0 +27.2	91.8	5 46.0 +28.2	91.9	5 43.9 +29.1	92.0	5 41.7 +30.0	92.1	5 41.7 +30.0	92.1	1	5 41.7 +30.0	92.1	5 41.7 +30.0	92.1	1	
2	6 18.2 +23.3	90.5	6 17.6 +24.3	90.6	6 16.9 +25.3	90.7	6 16.1 +26.2	90.8	6 15.2 +27.1	90.9	6 14.2 +28.0	91.1	6 13.0 +29.0	91.2	6 11.7 +29.9	91.3	6 11.7 +29.9	91.3	2	6 11.7 +29.9	91.3	6 11.7 +29.9	91.3	2	
3	6 41.5 +23.2	89.6	6 41.9 +24.2	89.7	6 42.2 +25.1	89.8	6 42.3 +26.1	89.9	6 42.3 +27.1	90.0	6 42.2 +28.0	90.2	6 42.0 +28.9	90.3	6 41.6 +29.9	90.4	6 41.6 +29.9	90.4	3	6 41.6 +29.9	90.4	6 41.6 +29.9	90.4	3	
4	7 04.7 +23.2	88.6	7 06.1 +24.1	88.8	7 07.3 +25.1	88.9	7 08.4 +26.0	89.0	7 09.4 +26.9	89.1	7 10.2 +27.9	89.3	7 10.9 +28.8	89.4	7 11.5 +29.7	89.5	7 11.5 +29.7	89.5	4	7 11.5 +29.7	89.5	7 11.5 +29.7	89.5	4	
5	7 27.9 +22.9	87.7	7 30.2 +23.9	87.8	7 32.4 +24.9	88.0	7 34.4 +25.9	88.1	7 36.3 +26.8	88.2	7 38.1 +27.8	88.4	7 39.7 +28.7	88.5	7 41.2 +29.6	88.6	7 41.2 +29.6	88.6	5	7 41.2 +29.6	88.6	7 41.2 +29.6	88.6	5	
6	7 50.8 +22.9	86.8	7 54.1 +23.9	86.9	7 57.3 +24.8	87.1	8 00.3 +25.8	87.2	8 03.1 +26.8	87.3	8 05.9 +27.6	87.5	8 08.4 +28.6	87.6	8 10.8 +29.5	87.8	8 10.8 +29.5	87.8	6	8 10.8 +29.5	87.8	8 10.8 +29.5	87.8	6	
7	8 13.7 +22.7	85.8	8 18.0 +23.7	86.0	8 22.1 +24.7	86.1	8 26.1 +25.6	86.3	8 29.9 +26.5	86.4	8 33.5 +27.5	86.6	8 37.0 +28.5	86.7	8 40.3 +29.4	86.9	8 40.3 +29.4	86.9	7	8 40.3 +29.4	86.9	8 40.3 +29.4	86.9	7	
8	8 36.4 +22.6	84.9	8 41.7 +23.6	85.1	8 46.8 +24.5	85.2	8 51.7 +25.5	85.4	8 56.4 +26.5	85.5	9 01.0 +27.4	85.7	9 05.5 +28.3	85.8	9 09.7 +29.3	86.0	9 09.7 +29.3	86.0	8	9 09.7 +29.3	86.0	9 09.7 +29.3	86.0	8	
9	8 59.0 +22.5	84.0	9 05.3 +23.4	84.1	9 11.3 +24.4	84.3	9 17.2 +25.3	84.5	9 22.9 +26.3	84.6	9 28.4 +27.3	84.8	9 33.8 +28.2	85.0	9 39.0 +29.1	85.1	9 39.0 +29.1	85.1	9	9 39.0 +29.1	85.1	9 39.0 +29.1	85.1	9	
10	9 21.5 +22.3	83.0	9 28.7 +23.3	83.2	9 35.7 +24.2	83.4	9 42.5 +25.3	83.5	9 49.2 +26.2	83.7	9 55.7 +27.1	83.9	10 02.0 +28.0	84.1	10 08.1 +29.0	84.2	10 08.1 +29.0	84.2	10	10 08.1 +29.0	84.2	10 08.1 +29.0	84.2	10	
11	9 43.8 +22.2	82.1	9 52.0 +23.1	82.3	9 59.9 +24.1	82.4	10 07.8 +25.0	82.6	10 15.4 +26.0	82.8	10 22.8 +27.0	83.0	10 30.0 +27.9	83.2	10 37.1 +28.8	83.3	10 37.1 +28.8	83.3	11	10 37.1 +28.8	83.3	10 37.1 +28.8	83.3	11	
12	10 06.0 +21.9	81.2	10 15.1 +23.0	81.3	10 24.0 +24.0	81.5	10 32.8 +24.9	81.7	10 41.4 +25.8	81.9	10 49.8 +26.8	82.1	10 57.9 +27.8	82.3	11 05.9 +28.7	82.4	11 05.9 +28.7	82.4	12	11 05.9 +28.7	82.4	11 05.9 +28.7	82.4	12	
13	10 27.9 +21.9	80.2	10 38.1 +22.8	80.4	10 48.0 +23.7	80.6	10 57.7 +24.7	80.8	11 07.2 +25.7	81.0	11 16.6 +26.6	81.2	11 25.7 +27.6	81.4	11 34.6 +28.5	81.6	11 34.6 +28.5	81.6	13	11 34.6 +28.5	81.6	11 34.6 +28.5	81.6	13	
14	10 49.8 +21.6	79.3	11 00.9 +22.6	79.4	11 11.7 +23.6	79.6	11 22.4 +24.6	79.8	11 32.9 +25.5	80.0	11 43.2 +26.4	80.2	11 53.3 +27.4	80.4	12 03.1 +28.3	80.7	12 03.1 +28.3	80.7	14	12 03.1 +28.3	80.7	12 03.1 +28.3	80.7	14	
15	11 11.4 +21.5	78.3	11 23.5 +22.4	78.5	11 35.3 +23.4	78.7	11 47.0 +24.4	78.9	11 58.4 +25.4	79.1	12 09.6 +26.3	79.3	12 20.7 +27.2	79.5	12 31.4 +28.2	79.8	12 31.4 +28.2	79.8	15	12 31.4 +28.2	79.8	12 31.4 +28.2	79.8	15	
16	11 32.9 +21.3	77.4	11 45.9 +22.3	77.6	11 58.7 +23.3	77.8	12 11.4 +24.1	78.0	12 23.8 +25.1	78.2	12 35.9 +26.1	78.4	12 47.9 +27.0	78.6	12 59.6 +28.0	78.8	12 59.6 +28.0	78.8	16	12 59.6 +28.0	78.8	12 59.6 +28.0	78.8	16	
17	11 54.2 +21.1	76.4	12 08.2 +22.0	76.6	12 22.0 +23.0	76.8	12 35.5 +24.0	77.0	12 48.9 +24.9	77.3	13 02.0 +25.9	77.5	13 14.9 +26.8	77.7	13 27.6 +27.7	77.9	13 27.6 +27.7	77.9	17	13 27.6 +27.7	77.9	13 27.6 +27.7	77.9	17	
18	12 15.3 +20.9	75.4	12 30.2 +21.9	75.7	12 45.0 +22.8	75.9	12 59.5 +23.8	76.1	13 13.8 +24.8	76.3	13 27.9 +25.7	76.6	13 41.7 +26.7	76.8	13 55.3 +27.6	77.0	13 55.3 +27.6	77.0	18	13 55.3 +27.6	77.0	13 55.3 +27.6	77.0	18	
19	12 36.2 +20.6	74.5	12 52.1 +21.6	74.7	13 07.8 +22.6	74.9	13 23.3 +23.6	75.2	13 38.6 +24.5	75.4	13 53.6 +25.5	75.6	14 08.4 +26.4	75.9	14 22.9 +27.3	76.1	14 22.9 +27.3	76.1	19	14 22.9 +27.3	76.1	14 22.9 +27.3	76.1	19	
20	12 56.8 +20.5	73.5	13 13.7 +21.5	73.7	13 30.4 +22.4	74.0	13 46.9 +23.3	74.2	14 03.1 +24.3	74.4	14 19.1 +25.2	74.7	14 34.8 +26.2	74.9	14 50.2 +27.2	75.2	14 50.2 +27.2	75.2	20	14 50.2 +27.2	75.2	14 50.2 +27.2	75.2	20	
21	13 17.3 +20.3	72.6	13 35.2 +21.2	72.8	13 52.8 +22.2	73.0	14 10.2 +23.2	73.3	14 27.4 +24.1	73.5	14 44.3 +25.0	73.8	15 01.0 +25.9	74.0	15 17.4 +26.9	74.3	15 17.4 +26.9	74.3	21	15 17.4 +26.9	74.3	15 17.4 +26.9	74.3	21	
22	13 37.6 +20.0	71.6	13 56.4 +21.0	71.8	14 15.0 +21.9	72.1	14 33.4 +22.9	72.3	14 51.5 +23.8	72.6	15 09.3 +24.8	72.8	15 26.9 +25.8	73.1	15 44.3 +26.6	73.3	15 44.3 +26.6	73.3	22	15 44.3 +26.6	73.3	15 44.3 +26.6	73.3	22	
23	13 57.6 +19.8	70.6	14 17.4 +20.7	70.9	14 36.9 +21.7	71.1	14 56.3 +22.6	71.3	15 15.3 +23.6	71.6	15 34.1 +24.6	71.9	15 52.7 +25.4	72.1	16 10.9 +26.5	72.4	16 10.9 +26.5	72.4	23	16 10.9 +26.5	72.4	16 10.9 +26.5	72.4	23	
24	14 17.4 +19.5	69.6	14 38.1 +20.5	69.9	14 58.6 +21.5	70.1	15 18.9 +22.4	70.4	15 38.9 +23.4	70.7	15 58.7 +24.3	70.9	16 18.1 +25.3	71.2	16 37.4 +26.1	71.5	16 37.4 +26.1	71.5	24	16 37.4 +26.1	71.5	16 37.4 +26.1	71.5	24	
25	14 36.9 +19.4	68.7	14 58.6 +20.3	68.9	15 20.1 +21.2	69.2	15 41.3 +22.2	69.4	16 02.3 +23.1	69.7	16 23.0 +24.0	70.0	16 43.4 +25.0	70.2	17 03.5 +25.9	70.5	17 03.5 +25.9	70.5	25	17 03.5 +25.9	70.5	17 03.5 +25.9	70.5	25	
26	14 56.3 +19.0	67.7	15 18.9 +20.0	67.9	15 41.3 +21.0	68.0	16 03.5 +21.9	68.5	16 25.4 +22.8	68.7	16 47.0 +23.8	69.0	17 08.4 +24.7	69.3	17 29.4 +25.7	69.6	17 29.4 +25.7	69.6	26	17 29.4 +25.7	69.6	17 29.4 +25.7	69.6	26	
27	15 15.3 +18.8	66.7	15 38.9 +19.8	67.0	16 02.3 +20.7	67.2	16 25.4 +21.6	67.5	16 48.2 +22.6	67.8	17 10.8 +23.5	68.0	17 33.1 +24.4	68.3	17 55.1 +25.3	68.6	17 55.1 +25.3	68.6	27	17 55.1 +25.3	68.6	17 55.1 +25.3	68.6	27	
28	15 34.1 +18.6	65.7	15 58.7 +19.4	66.0	16 23.0 +20.4	66.2	16 47.0 +21.4	66.5	17 10.8 +22.3	66.8	17 34.3 +23.2	67.1	17 57.5 +24.2	67.4	18 20.4 +25.1	67.7	18 20.4 +25.1	67.7	28	18 20.4 +25.1	67.7	18 20.4 +25.1	67.7	28	
29	15 52.7 +18.2	64.7	16 18.1 +19.3	65.0	16 43.4 +20.1	65.3	17 08.4 +21.0	65.5	20 59.0 +18.7	65.9	21 20.1 +20.4	66.0	19 49.1 +21.4	66.2	20 17.9 +22.2	66.5	20 17.9 +22.2	66.5	29	20 17.9 +22.2	66.5	20 17.9 +22.2	66.5	29	
30	17 38.0 +16.5	58.7	18 09.0 +17.5	59.0	18 39.8 +18.3	59.3	19 10.3 +19.2	59.6	19 40.5 +20.1	59.9	20 10.5 +21.0	60.2	20 40.1 +22.0	60.5	21 09.5 +22.8	60.9	21 09.5 +22.8	60.9	35	21 09.5 +22.8	60.9	21 09.5 +22.8	60.9	35	
31	17 54.5 +16.3	57.7	18 26.5 +17.1	58.0	18 58.1 +18.0	58.3	19 29.5 +18.9	58.6	20 00.6 +19.6	58.8	20 31.5 +20.7	59.2	21 02.1 +21.5	59.5	21 32.3 +22.5	59.9	21 32.3 +22.								

**LATITUDE CONTRARY NAME TO DECLINATION**

**L.H.A. 84°, 276°**

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.																																																																																																																																																																																																																																																																																																																																																															
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0	5 31.3 -23.6	92.4	5 28.8 -24.6	92.4	5 26.2 -25.5	92.5	5 23.5 -26.5	92.6	5 20.6 -27.4	92.7	5 17.7 -28.3	92.8	5 14.7 -29.2	92.9	5 11.6 -30.1	93.0	5	11.6 -30.1	93.0	0	5 31.3 -23.6	92.4	5 28.8 -24.6	92.4																																																																																																																																																																																																																																																																																																																																																																
1	5 07.7 -23.7	93.3	5 04.2 -24.6	93.4	5 00.7 -25.6	93.5	4 57.0 -26.5	93.5	4 53.2 -27.4	93.6	4 49.4 -28.4	93.7	4 45.5 -29.3	93.8	4 41.5 -30.3	93.9	1	4 41.5 -30.3	93.9	4 45.5 -29.3	93.8	1																																																																																																																																																																																																																																																																																																																																																																		
2	4 44.0 -23.7	94.2	4 39.6 -24.7	94.3	4 35.1 -25.7	94.4	4 30.5 -26.6	94.4	4 25.8 -27.6	94.5	4 21.0 -28.4	94.6	4 16.2 -29.4	94.7	4 11.2 -30.2	94.7	2	4 11.2 -30.2	94.7	4 16.2 -29.4	94.7	2																																																																																																																																																																																																																																																																																																																																																																		
3	4 20.3 -23.8	95.1	4 14.9 -24.8	95.2	4 09.4 -25.7	95.3	4 03.9 -26.7	95.3	3 58.2 -27.5	95.4	3 52.6 -28.6	95.5	3 46.8 -29.4	95.5	3 41.0 -30.4	95.6	3	3 41.0 -30.4	95.6	3 46.8 -29.4	95.5	3																																																																																																																																																																																																																																																																																																																																																																		
4	3 56.5 -23.9	96.0	3 50.1 -24.8	96.1	3 43.7 -25.8	96.2	3 37.2 -26.7	96.2	3 30.7 -27.7	96.3	3 24.0 -28.5	96.4	3 17.4 -29.5	96.4	3 10.6 -30.3	96.5	4	3 10.6 -30.3	96.5	3 17.4 -29.5	96.4	4																																																																																																																																																																																																																																																																																																																																																																		
5	3 32.6 -23.9	97.0	3 25.3 -24.9	97.0	3 17.9 -25.8	97.1	3 10.5 -26.8	97.1	3 03.0 -27.7	97.2	2 55.5 -28.6	97.2	2 47.9 -29.5	97.3	2 40.3 -30.4	97.3	5	2 40.3 -30.4	97.3	2 47.9 -29.5	97.3	5																																																																																																																																																																																																																																																																																																																																																																		
6	3 08.7 -24.0	97.9	3 00.4 -24.9	97.9	2 52.1 -25.9	98.0	2 43.7 -26.8	98.0	2 35.3 -27.7	98.1	2 26.9 -28.6	98.1	2 18.4 -29.6	98.2	2 09.9 -30.5	98.2	6	2 09.9 -30.5	98.2	2 18.4 -29.6	98.2	6																																																																																																																																																																																																																																																																																																																																																																		
7	2 44.7 -24.0	98.8	2 35.5 -25.0	98.8	2 26.2 -25.9	98.9	2 16.9 -26.8	98.9	2 07.6 -27.7	99.0	1 58.3 -28.7	99.0	1 48.8 -29.5	99.0	1 39.4 -30.4	99.1	7	1 39.4 -30.4	99.1	1 48.8 -29.5	99.0	7																																																																																																																																																																																																																																																																																																																																																																		
8	2 20.7 -24.1	99.7	2 10.5 -25.0	99.8	2 00.3 -25.9	99.8	1 50.1 -26.8	99.8	1 39.9 -27.8	99.9	1 29.6 -28.7	99.9	1 19.3 -29.6	99.9	1 09.0 -30.5	99.9	8	1 09.0 -30.5	99.9	1 19.3 -29.6	99.9	8																																																																																																																																																																																																																																																																																																																																																																		
9	1 56.6 -24.1	100.6	1 45.5 -25.0	100.7	1 34.4 -26.0	100.7	1 23.3 -26.9	100.7	1 12.1 -27.8	100.7	1 00.9 -28.7	100.8	0 49.7 -29.6	100.8	0 38.5 -30.5	100.8	9	0 38.5 -30.5	100.8	0 49.7 -29.6	100.8	9																																																																																																																																																																																																																																																																																																																																																																		
10	1 32.5 -24.1	101.5	1 20.5 -25.1	101.6	1 08.4 -25.9	101.6	0 56.4 -26.9	101.6	0 44.3 -27.8	101.6	0 32.2 -28.7	101.6	0 20.1 -29.6	101.6	0 08.0 -30.5	101.6	10	0 08.0 -30.5	101.6	0 20.1 -29.6	101.6	10																																																																																																																																																																																																																																																																																																																																																																		
11	1 08.4 -24.1	102.5	0 55.4 -25.0	102.5	0 42.5 -26.0	102.5	0 29.5 -26.9	102.5	0 16.5 -27.8	102.5	0 03.5 -28.7	102.5	0 09.5 +29.6	77.5	0 22.5 +30.5	77.5	11	0 22.5 +30.5	77.5	0 09.5 +29.6	77.5	11																																																																																																																																																																																																																																																																																																																																																																		
12	0 44.3 -24.2	103.4	0 30.4 -25.1	103.4	0 16.5 -26.0	103.4	0 02.6 -26.9	103.4	0 09.5 +26.0	75.7	0 39.1 +27.8	75.7	0 53.9 +28.7	75.7	1 08.7 +29.6	75.7	12	0 53.0 +30.4	76.6	0 39.1 +29.6	76.6	12																																																																																																																																																																																																																																																																																																																																																																		
13	0 20.1 -24.1	104.3	0 05.3 -25.0	104.3	0 09.5 +26.0	75.7	0 24.3 +26.9	75.7	0 16.9 +27.8	74.8	1 22.6 +28.7	74.9	1 38.3 +29.5	74.9	1 53.9 +30.4	74.9	14	1 53.9 +30.4	74.9	1 38.3 +29.5	74.9	14																																																																																																																																																																																																																																																																																																																																																																		
14	0 04.0 +24.1	74.8	0 19.7 +25.1	74.8	0 35.5 +26.0	74.8	0 51.2 +26.9	74.8	1 01.5 +25.9	73.9	1 18.1 +26.8	73.9	1 51.3 +28.6	74.0	2 07.8 +29.5	74.0	2 24.3 +30.4	74.0	15	2 24.3 +30.4	74.0	2 07.8 +29.5	74.0	15																																																																																																																																																																																																																																																																																																																																																																
15	0 28.1 +24.2	73.9	0 44.8 +25.1	73.9	1 01.5 +25.9	73.9	1 18.1 +26.8	73.9	1 34.7 +27.7	73.9	1 51.3 +28.6	74.0	2 07.8 +29.5	74.0	2 24.3 +30.4	74.0	16	2 24.3 +30.4	74.0	2 07.8 +29.5	74.0	16																																																																																																																																																																																																																																																																																																																																																																		
16	0 52.3 +24.1	73.0	1 09.9 +25.0	73.0	1 27.4 +25.9	73.0	1 44.9 +26.9	73.0	2 02.4 +27.8	73.1	2 19.9 +28.6	73.1	2 37.3 +29.5	73.1	2 54.7 +30.4	73.2	17	2 54.7 +30.4	73.2	2 37.3 +29.5	73.2	17																																																																																																																																																																																																																																																																																																																																																																		
17	1 16.4 +24.1	72.0	1 34.9 +25.0	72.1	1 53.3 +26.0	72.1	2 11.8 +26.8	72.1	2 30.2 +27.7	72.2	2 48.5 +28.6	72.2	3 06.8 +29.5	72.3	3 25.1 +30.3	72.3	18	3 25.1 +30.3	72.3	3 06.8 +29.5	72.3	18																																																																																																																																																																																																																																																																																																																																																																		
18	1 40.5 +24.1	71.1	1 59.9 +25.0	71.2	2 19.3 +25.8	71.2	2 38.6 +26.7	71.2	2 57.9 +27.6	71.3	3 17.1 +28.5	71.3	3 36.3 +29.4	71.4	3 55.4 +30.2	71.5	19	3 55.4 +30.2	71.5	3 17.1 +28.5	71.5	19																																																																																																																																																																																																																																																																																																																																																																		
19	2 04.6 +24.0	70.2	2 24.9 +24.9	70.2	2 45.1 +25.9	70.3	3 05.3 +26.8	70.3	3 25.5 +27.6	70.4	3 45.6 +28.5	70.5	4 05.7 +29.3	70.5	4 25.6 +30.2	70.6	20	4 25.6 +30.2	70.6	4 05.7 +29.3	70.6	20	20	2 28.6 +24.0	69.3	2 49.8 +24.9	69.3	3 11.0 +25.8	69.4	3 32.1 +26.6	69.4	3 53.1 +27.5	69.5	4 14.1 +28.4	69.6	4 35.0 +29.3	69.6	4 55.8 +30.1	69.7	21	4 55.8 +30.1	69.7	4 14.1 +28.4	69.6	21	21	2 52.6 +24.0	68.4	3 14.7 +24.9	68.4	3 36.8 +25.7	68.5	3 58.7 +26.6	68.5	4 20.6 +27.5	68.6	4 42.5 +28.3	68.7	5 04.3 +29.2	68.8	5 25.9 +30.1	68.9	22	5 25.9 +30.1	68.9	5 04.3 +29.2	68.8	22	22	3 16.6 +23.9	67.5	3 39.6 +24.8	67.5	4 02.5 +25.7	67.6	4 25.3 +26.6	67.6	4 48.1 +27.4	67.7	5 10.8 +28.3	67.8	5 33.5 +29.1	67.9	5 56.0 +30.0	68.0	23	5 56.0 +30.0	68.0	5 33.5 +29.1	67.9	23	23	3 40.5 +23.9	66.5	4 04.4 +24.7	66.6	4 28.2 +25.6	66.7	4 51.9 +26.5	66.7	5 15.5 +27.4	66.8	5 39.1 +28.2	66.9	6 02.6 +29.0	67.0	6 26.0 +29.8	67.1	24	6 26.0 +29.8	67.1	6 02.6 +29.0	67.0	24	24	4 04.4 +23.8	65.6	4 29.1 +24.7	65.7	4 53.8 +25.5	65.8	5 18.4 +26.4	65.8	5 42.9 +27.2	65.9	6 07.3 +28.1	66.0	6 31.6 +29.0	66.1	6 55.8 +29.8	66.2	25	6 55.8 +29.8	66.2	6 31.6 +29.0	66.1	25	25	4 28.2 +23.7	64.7	4 53.8 +24.6	64.8	5 19.3 +25.5	64.9	5 44.8 +26.3	64.9	6 10.1 +27.2	65.0	6 35.4 +28.0	65.1	7 00.6 +28.8	65.2	7 25.6 +29.7	65.4	26	7 25.6 +29.7	65.4	7 00.6 +28.8	65.2	26	26	4 51.9 +23.6	63.8	5 18.4 +24.5	63.9	5 44.8 +25.3	63.9	6 11.1 +26.2	64.0	6 37.3 +27.0	64.1	7 03.4 +27.9	64.2	7 29.4 +28.8	64.4	7 55.3 +29.6	64.5	27	7 55.3 +29.6	64.5	8 24.9 +29.4	63.6	27	27	5 15.5 +23.6	62.9	5 42.9 +24.4	62.9	6 10.1 +25.3	63.0	6 37.3 +26.1	63.1	7 04.3 +27.0	63.2	7 31.3 +27.8	63.4	7 58.2 +28.6	63.5	8 24.9 +29.4	63.6	28	8 24.9 +29.4	63.6	7 58.2 +28.6	63.5	28	28	5 39.1 +23.5	61.9	6 07.3 +24.3	62.0	6 35.4 +25.2	62.1	7 03.4 +26.0	62.2	7 31.3 +26.9	62.3	7 59.1 +27.5	62.5	8 26.8 +28.5	62.6	8 54.3 +29.4	62.7	29	8 54.3 +29.4	62.7	9 23.7 +29.2	61.8	29	29	6 02.6 +23.4	61.0	6 31.6 +24.2	61.1	7 00.6 +25.0	61.2	7 29.4 +25.9	61.3	7 58.2 +26.7	61.4	8 26.8 +27.5	61.6	8 55.3 +28.4	61.7	9 23.7 +29.2	61.8	30	9 23.7 +29.2	61.8	8 55.3 +28.4	61.7	30	30	6 26.0 +23.3	60.1	6 55.8 +24.2	60.2	7 25.6 +25.0	60.3	7 55.3 +25.8	60.4	8 24.9 +26.6	60.5	8 54.3 +27.5	60.7	9 23.7 +28.2	60.8	9 52.9 +29.0	61.0	31	9 52.9 +29.0	61.0	10 21.9 +28.9	60.1	31	31	6 49.3 +23.1	59.2	7 20.0 +24.0	59.3	7 50.6 +24.8	59.4	8 21.1 +25.7	59.5	8 51.5 +26.5	59.6	9 21.8 +27.3	59.8	9 51.9 +28.1	59.9	10 21.9 +28.9	60.1	32	10 21.9 +28.9	60.1	11 20.0 +28.8	59.2	32	32	7 12.4 +23.1	58.2	7 44.0 +23.9	58.3	8 15.4 +24.7	58.5	8 46.8 +25.5	58.6	9 18.0 +26.3	58.7	9 49.1 +27.1	58.9	10 20.0 +28.0	59.0	10 50.8 +28.8	59.2	33	10 50.8 +28.8	59.2	11 19.6 +28.6	58.3	33	33	7 35.5 +22.9	57.3	8 07.9 +23.7	57.4	8 40.1 +24.6	57.5	9 12.3 +25.4	57.7	9 44.3 +26.2	57.8	10 16.2 +27.0	58.0	10 48.0 +27.8	58.1	11 19.6 +28.6	58.3	34	11 19.6 +28.6	58.3	12 0.4 +27.8	57.4	34	34	7 58.4 +22.9	56.4	8 31.6 +23.7	56.5	9 04.7 +24.4	56.6	9 37.7 +25.2	56.7	10 10.5 +26.0	56.9	10 43.2 +26.8	57.0	11 15.8 +27.6	57.2	11 48.2 +28.4	57.4	35	11 48.2 +28.4	57.4	12 0.4 +27.8	56.5	35	35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8
20	2 28.6 +24.0	69.3	2 49.8 +24.9	69.3	3 11.0 +25.8	69.4	3 32.1 +26.6	69.4	3 53.1 +27.5	69.5	4 14.1 +28.4	69.6	4 35.0 +29.3	69.6	4 55.8 +30.1	69.7	21	4 55.8 +30.1	69.7	4 14.1 +28.4	69.6	21																																																																																																																																																																																																																																																																																																																																																																		
21	2 52.6 +24.0	68.4	3 14.7 +24.9	68.4	3 36.8 +25.7	68.5	3 58.7 +26.6	68.5	4 20.6 +27.5	68.6	4 42.5 +28.3	68.7	5 04.3 +29.2	68.8	5 25.9 +30.1	68.9	22	5 25.9 +30.1	68.9	5 04.3 +29.2	68.8	22																																																																																																																																																																																																																																																																																																																																																																		
22	3 16.6 +23.9	67.5	3 39.6 +24.8	67.5	4 02.5 +25.7	67.6	4 25.3 +26.6	67.6	4 48.1 +27.4	67.7	5 10.8 +28.3	67.8	5 33.5 +29.1	67.9	5 56.0 +30.0	68.0	23	5 56.0 +30.0	68.0	5 33.5 +29.1	67.9	23																																																																																																																																																																																																																																																																																																																																																																		
23	3 40.5 +23.9	66.5	4 04.4 +24.7	66.6	4 28.2 +25.6	66.7	4 51.9 +26.5	66.7	5 15.5 +27.4	66.8	5 39.1 +28.2	66.9	6 02.6 +29.0	67.0	6 26.0 +29.8	67.1	24	6 26.0 +29.8	67.1	6 02.6 +29.0	67.0	24																																																																																																																																																																																																																																																																																																																																																																		
24	4 04.4 +23.8	65.6	4 29.1 +24.7	65.7	4 53.8 +25.5	65.8	5 18.4 +26.4	65.8	5 42.9 +27.2	65.9	6 07.3 +28.1	66.0	6 31.6 +29.0	66.1	6 55.8 +29.8	66.2	25	6 55.8 +29.8	66.2	6 31.6 +29.0	66.1	25																																																																																																																																																																																																																																																																																																																																																																		
25	4 28.2 +23.7	64.7	4 53.8 +24.6	64.8	5 19.3 +25.5	64.9	5 44.8 +26.3	64.9	6 10.1 +27.2	65.0	6 35.4 +28.0	65.1	7 00.6 +28.8	65.2	7 25.6 +29.7	65.4	26	7 25.6 +29.7	65.4	7 00.6 +28.8	65.2	26																																																																																																																																																																																																																																																																																																																																																																		
26	4 51.9 +23.6	63.8	5 18.4 +24.5	63.9	5 44.8 +25.3	63.9	6 11.1 +26.2	64.0	6 37.3 +27.0	64.1	7 03.4 +27.9	64.2	7 29.4 +28.8	64.4	7 55.3 +29.6	64.5	27	7 55.3 +29.6	64.5	8 24.9 +29.4	63.6	27																																																																																																																																																																																																																																																																																																																																																																		
27	5 15.5 +23.6	62.9	5 42.9 +24.4	62.9	6 10.1 +25.3	63.0	6 37.3 +26.1	63.1	7 04.3 +27.0	63.2	7 31.3 +27.8	63.4	7 58.2 +28.6	63.5	8 24.9 +29.4	63.6	28	8 24.9 +29.4	63.6	7 58.2 +28.6	63.5	28																																																																																																																																																																																																																																																																																																																																																																		
28	5 39.1 +23.5	61.9	6 07.3 +24.3	62.0	6 35.4 +25.2	62.1	7 03.4 +26.0	62.2	7 31.3 +26.9	62.3	7 59.1 +27.5	62.5	8 26.8 +28.5	62.6	8 54.3 +29.4	62.7	29	8 54.3 +29.4	62.7	9 23.7 +29.2	61.8	29																																																																																																																																																																																																																																																																																																																																																																		
29	6 02.6 +23.4	61.0	6 31.6 +24.2	61.1	7 00.6 +25.0	61.2	7 29.4 +25.9	61.3	7 58.2 +26.7	61.4	8 26.8 +27.5	61.6	8 55.3 +28.4	61.7	9 23.7 +29.2	61.8	30	9 23.7 +29.2	61.8	8 55.3 +28.4	61.7	30	30	6 26.0 +23.3	60.1	6 55.8 +24.2	60.2	7 25.6 +25.0	60.3	7 55.3 +25.8	60.4	8 24.9 +26.6	60.5	8 54.3 +27.5	60.7	9 23.7 +28.2	60.8	9 52.9 +29.0	61.0	31	9 52.9 +29.0	61.0	10 21.9 +28.9	60.1	31	31	6 49.3 +23.1	59.2	7 20.0 +24.0	59.3	7 50.6 +24.8	59.4	8 21.1 +25.7	59.5	8 51.5 +26.5	59.6	9 21.8 +27.3	59.8	9 51.9 +28.1	59.9	10 21.9 +28.9	60.1	32	10 21.9 +28.9	60.1	11 20.0 +28.8	59.2	32	32	7 12.4 +23.1	58.2	7 44.0 +23.9	58.3	8 15.4 +24.7	58.5	8 46.8 +25.5	58.6	9 18.0 +26.3	58.7	9 49.1 +27.1	58.9	10 20.0 +28.0	59.0	10 50.8 +28.8	59.2	33	10 50.8 +28.8	59.2	11 19.6 +28.6	58.3	33	33	7 35.5 +22.9	57.3	8 07.9 +23.7	57.4	8 40.1 +24.6	57.5	9 12.3 +25.4	57.7	9 44.3 +26.2	57.8	10 16.2 +27.0	58.0	10 48.0 +27.8	58.1	11 19.6 +28.6	58.3	34	11 19.6 +28.6	58.3	12 0.4 +27.8	57.4	34	34	7 58.4 +22.9	56.4	8 31.6 +23.7	56.5	9 04.7 +24.4	56.6	9 37.7 +25.2	56.7	10 10.5 +26.0	56.9	10 43.2 +26.8	57.0	11 15.8 +27.6	57.2	11 48.2 +28.4	57.4	35	11 48.2 +28.4	57.4	12 0.4 +27.8	56.5	35	35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8																																																																																																																																																																																																																																						
30	6 26.0 +23.3	60.1	6 55.8 +24.2	60.2	7 25.6 +25.0	60.3	7 55.3 +25.8	60.4	8 24.9 +26.6	60.5	8 54.3 +27.5	60.7	9 23.7 +28.2	60.8	9 52.9 +29.0	61.0	31	9 52.9 +29.0	61.0	10 21.9 +28.9	60.1	31	31	6 49.3 +23.1	59.2	7 20.0 +24.0	59.3	7 50.6 +24.8	59.4	8 21.1 +25.7	59.5	8 51.5 +26.5	59.6	9 21.8 +27.3	59.8	9 51.9 +28.1	59.9	10 21.9 +28.9	60.1	32	10 21.9 +28.9	60.1	11 20.0 +28.8	59.2	32	32	7 12.4 +23.1	58.2	7 44.0 +23.9	58.3	8 15.4 +24.7	58.5	8 46.8 +25.5	58.6	9 18.0 +26.3	58.7	9 49.1 +27.1	58.9	10 20.0 +28.0	59.0	10 50.8 +28.8	59.2	33	10 50.8 +28.8	59.2	11 19.6 +28.6	58.3	33	33	7 35.5 +22.9	57.3	8 07.9 +23.7	57.4	8 40.1 +24.6	57.5	9 12.3 +25.4	57.7	9 44.3 +26.2	57.8	10 16.2 +27.0	58.0	10 48.0 +27.8	58.1	11 19.6 +28.6	58.3	34	11 19.6 +28.6	58.3	12 0.4 +27.8	57.4	34	34	7 58.4 +22.9	56.4	8 31.6 +23.7	56.5	9 04.7 +24.4	56.6	9 37.7 +25.2	56.7	10 10.5 +26.0	56.9	10 43.2 +26.8	57.0	11 15.8 +27.6	57.2	11 48.2 +28.4	57.4	35	11 48.2 +28.4	57.4	12 0.4 +27.8	56.5	35	35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8																																																																																																																																																																																																																																																													
31	6 49.3 +23.1	59.2	7 20.0 +24.0	59.3	7 50.6 +24.8	59.4	8 21.1 +25.7	59.5	8 51.5 +26.5	59.6	9 21.8 +27.3	59.8	9 51.9 +28.1	59.9	10 21.9 +28.9	60.1	32	10 21.9 +28.9	60.1	11 20.0 +28.8	59.2	32	32	7 12.4 +23.1	58.2	7 44.0 +23.9	58.3	8 15.4 +24.7	58.5	8 46.8 +25.5	58.6	9 18.0 +26.3	58.7	9 49.1 +27.1	58.9	10 20.0 +28.0	59.0	10 50.8 +28.8	59.2	33	10 50.8 +28.8	59.2	11 19.6 +28.6	58.3	33	33	7 35.5 +22.9	57.3	8 07.9 +23.7	57.4	8 40.1 +24.6	57.5	9 12.3 +25.4	57.7	9 44.3 +26.2	57.8	10 16.2 +27.0	58.0	10 48.0 +27.8	58.1	11 19.6 +28.6	58.3	34	11 19.6 +28.6	58.3	12 0.4 +27.8	57.4	34	34	7 58.4 +22.9	56.4	8 31.6 +23.7	56.5	9 04.7 +24.4	56.6	9 37.7 +25.2	56.7	10 10.5 +26.0	56.9	10 43.2 +26.8	57.0	11 15.8 +27.6	57.2	11 48.2 +28.4	57.4	35	11 48.2 +28.4	57.4	12 0.4 +27.8	56.5	35	35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8																																																																																																																																																																																																																																																																																				
32	7 12.4 +23.1	58.2	7 44.0 +23.9	58.3	8 15.4 +24.7	58.5	8 46.8 +25.5	58.6	9 18.0 +26.3	58.7	9 49.1 +27.1	58.9	10 20.0 +28.0	59.0	10 50.8 +28.8	59.2	33	10 50.8 +28.8	59.2	11 19.6 +28.6	58.3	33	33	7 35.5 +22.9	57.3	8 07.9 +23.7	57.4	8 40.1 +24.6	57.5	9 12.3 +25.4	57.7	9 44.3 +26.2	57.8	10 16.2 +27.0	58.0	10 48.0 +27.8	58.1	11 19.6 +28.6	58.3	34	11 19.6 +28.6	58.3	12 0.4 +27.8	57.4	34	34	7 58.4 +22.9	56.4	8 31.6 +23.7	56.5	9 04.7 +24.4	56.6	9 37.7 +25.2	56.7	10 10.5 +26.0	56.9	10 43.2 +26.8	57.0	11 15.8 +27.6	57.2	11 48.2 +28.4	57.4	35	11 48.2 +28.4	57.4	12 0.4 +27.8	56.5	35	35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8																																																																																																																																																																																																																																																																																																											
33	7 35.5 +22.9	57.3	8 07.9 +23.7	57.4	8 40.1 +24.6	57.5	9 12.3 +25.4	57.7	9 44.3 +26.2	57.8	10 16.2 +27.0	58.0	10 48.0 +27.8	58.1	11 19.6 +28.6	58.3	34	11 19.6 +28.6	58.3	12 0.4 +27.8	57.4	34	34	7 58.4 +22.9	56.4	8 31.6 +23.7	56.5	9 04.7 +24.4	56.6	9 37.7 +25.2	56.7	10 10.5 +26.0	56.9	10 43.2 +26.8	57.0	11 15.8 +27.6	57.2	11 48.2 +28.4	57.4	35	11 48.2 +28.4	57.4	12 0.4 +27.8	56.5	35	35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8																																																																																																																																																																																																																																																																																																																																		
34	7 58.4 +22.9	56.4	8 31.6 +23.7	56.5	9 04.7 +24.4	56.6	9 37.7 +25.2	56.7	10 10.5 +26.0	56.9	10 43.2 +26.8	57.0	11 15.8 +27.6	57.2	11 48.2 +28.4	57.4	35	11 48.2 +28.4	57.4	12 0.4 +27.8	56.5	35	35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8																																																																																																																																																																																																																																																																																																																																																									
35	8 21.3 +22.7	55.4	8 55.3 +23.5	55.6	9 29.1 +24.3	55.7	10 02.9 +25.1	55.8																																																																																																																																																																																																																																																																																																																																																																																

85°, 275° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.		
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z			
0	4 36.1 +23.5	92.0	4 34.0 +24.5	92.0	4 31.8 +25.4	92.1	4 29.6 +26.3	92.2	4 27.2 +27.3	92.3	4 24.8 +28.2	92.4	4 22.3 +29.1	92.4	4 19.7 +30.1	92.5	4 17.2 +31.0	92.5	4 14.7 +31.9	92.5	4 12.2 +32.8	92.5	4 9.7 +33.7	92.5	0		
1	4 59.6 +23.4	91.0	4 58.5 +24.3	91.1	4 57.2 +25.4	91.2	4 55.9 +26.3	91.3	4 54.5 +27.2	91.4	4 53.0 +28.2	91.5	4 51.4 +29.1	91.6	4 49.8 +30.0	91.6	4 48.2 +30.9	91.6	4 46.6 +31.8	91.6	4 45.0 +32.7	91.6	4 43.4 +33.6	91.6	4 41.8 +34.5	91.6	1
2	5 23.0 +23.3	90.1	5 22.8 +24.3	90.2	5 22.6 +25.2	90.3	5 22.2 +26.2	90.4	5 21.7 +27.2	90.5	5 21.2 +28.1	90.6	5 20.5 +29.0	90.7	5 19.8 +29.9	90.8	5 19.1 +30.8	90.8	5 18.4 +31.7	90.8	5 17.7 +32.6	90.8	5 17.0 +33.5	90.8	5 16.3 +34.4	90.8	2
3	5 46.3 +23.2	89.2	5 47.1 +24.2	89.3	5 47.8 +25.2	89.4	5 48.4 +26.1	89.5	5 48.9 +27.0	89.6	5 49.3 +27.9	89.7	5 49.5 +28.9	89.8	5 49.7 +29.8	89.9	5 49.9 +30.7	89.9	5 49.1 +31.6	89.9	5 48.3 +32.5	89.9	5 47.5 +33.4	89.9	5 46.7 +34.3	89.9	3
4	6 09.5 +23.2	88.3	6 11.3 +24.1	88.4	6 13.0 +25.0	88.5	6 14.5 +26.0	88.6	6 15.9 +27.0	88.7	6 17.2 +27.9	88.8	6 18.4 +28.9	88.9	6 19.5 +29.8	89.0	6 19.5 +29.8	89.0	6 19.5 +29.8	89.0	6 19.5 +29.8	89.0	6 19.5 +29.8	89.0	4		
5	6 32.7 +23.0	87.3	6 35.4 +24.0	87.4	6 38.0 +25.0	87.6	6 40.5 +25.9	87.7	6 42.9 +26.9	87.8	6 45.1 +27.8	87.9	6 47.3 +28.7	88.0	6 49.3 +29.6	88.1	6 49.3 +29.6	88.1	6 49.3 +29.6	88.1	6 49.3 +29.6	88.1	6 49.3 +29.6	88.1	5		
6	6 55.7 +22.9	86.4	6 59.4 +23.9	86.5	7 03.0 +24.8	86.6	7 06.4 +25.9	86.8	7 09.8 +26.7	86.9	7 12.9 +27.7	87.0	7 16.0 +28.6	87.1	7 18.9 +29.6	87.3	7 18.9 +29.6	87.3	7 18.9 +29.6	87.3	7 18.9 +29.6	87.3	7 18.9 +29.6	87.3	6		
7	7 18.6 +22.8	85.5	7 23.3 +23.8	85.6	7 27.8 +24.8	85.7	7 32.3 +25.6	85.9	7 36.5 +26.7	86.0	7 40.6 +27.6	86.1	7 44.6 +28.5	86.3	7 48.5 +29.4	86.4	7 48.5 +29.4	86.4	7 48.5 +29.4	86.4	7 48.5 +29.4	86.4	7 48.5 +29.4	86.4	7		
8	7 41.4 +22.7	84.5	7 47.1 +23.6	84.7	7 52.6 +24.6	84.8	7 57.9 +25.6	84.9	8 03.2 +26.5	85.1	8 08.2 +27.5	85.2	8 13.1 +28.4	85.4	8 17.9 +29.3	85.5	8 17.9 +29.3	85.5	8 17.9 +29.3	85.5	8 17.9 +29.3	85.5	8 17.9 +29.3	85.5	8		
9	8 04.1 +22.6	83.6	8 10.7 +23.6	83.7	8 17.2 +24.5	83.9	8 23.5 +25.5	84.0	8 29.7 +26.4	84.2	8 35.7 +27.3	84.3	8 41.5 +28.3	84.5	8 47.2 +29.2	84.6	8 47.2 +29.2	84.6	8 47.2 +29.2	84.6	8 47.2 +29.2	84.6	8 47.2 +29.2	84.6	9		
10	8 26.7 +22.4	82.7	8 34.3 +23.4	82.8	8 41.7 +24.4	83.0	8 49.0 +25.3	83.1	8 56.1 +26.3	83.3	9 03.0 +27.3	83.4	9 09.8 +28.2	83.6	9 16.4 +29.1	83.7	9 16.4 +29.1	83.7	9 16.4 +29.1	83.7	9 16.4 +29.1	83.7	9 16.4 +29.1	83.7	10		
11	8 49.1 +22.3	81.7	8 57.7 +23.2	81.9	9 06.1 +24.2	82.0	9 14.3 +25.2	82.2	9 22.4 +26.1	82.4	9 30.3 +27.0	82.5	9 38.0 +28.0	82.7	9 45.5 +28.9	82.9	9 45.5 +28.9	82.9	9 45.5 +28.9	82.9	9 45.5 +28.9	82.9	9 45.5 +28.9	82.9	11		
12	9 11.4 +22.2	80.8	9 20.9 +23.1	80.9	9 30.3 +24.1	81.1	9 39.5 +25.0	81.3	9 48.5 +26.0	81.4	9 57.3 +26.9	81.6	10 06.0 +27.8	81.8	10 14.4 +28.8	82.0	10 14.4 +28.8	82.0	10 14.4 +28.8	82.0	10 14.4 +28.8	82.0	10 14.4 +28.8	82.0	12		
13	9 33.6 +21.9	79.8	9 44.0 +23.0	80.0	9 54.4 +23.9	80.2	10 04.5 +24.9	80.4	10 14.5 +25.8	80.5	10 24.2 +26.8	80.7	10 33.8 +27.7	80.9	10 43.2 +28.7	81.1	10 43.2 +28.7	81.1	10 43.2 +28.7	81.1	10 43.2 +28.7	81.1	10 43.2 +28.7	81.1	13		
14	9 55.5 +21.9	78.9	10 07.0 +22.8	79.1	10 18.3 +23.7	79.2	10 29.4 +24.7	79.4	10 40.3 +25.7	79.6	10 51.0 +26.6	79.8	11 01.5 +27.6	80.0	11 11.9 +28.4	80.2	11 11.9 +28.4	80.2	11 11.9 +28.4	80.2	11 11.9 +28.4	80.2	11 11.9 +28.4	80.2	14		
15	10 17.4 +21.6	78.0	10 29.8 +22.6	78.1	10 42.0 +23.6	78.3	10 54.1 +24.6	78.5	11 06.0 +25.5	78.7	11 17.6 +26.5	78.9	11 29.1 +27.4	79.1	11 40.3 +28.4	79.3	11 40.3 +28.4	79.3	11 40.3 +28.4	79.3	11 40.3 +28.4	79.3	11 40.3 +28.4	79.3	15		
16	10 39.0 +21.5	77.0	10 52.4 +22.5	77.2	11 05.6 +23.5	77.4	11 18.7 +24.3	77.6	11 31.5 +25.3	77.8	11 44.1 +26.2	78.0	11 56.5 +27.2	78.2	12 08.7 +28.1	78.4	12 08.7 +28.1	78.4	12 08.7 +28.1	78.4	12 08.7 +28.1	78.4	12 08.7 +28.1	78.4	16		
17	11 00.5 +21.3	76.1	11 14.9 +22.3	76.2	11 29.1 +23.2	76.4	11 43.0 +24.2	76.6	11 56.8 +25.1	76.8	12 10.3 +26.1	77.1	12 23.7 +27.0	77.3	12 36.8 +27.9	77.5	12 36.8 +27.9	77.5	12 36.8 +27.9	77.5	12 36.8 +27.9	77.5	12 36.8 +27.9	77.5	17		
18	11 21.8 +21.2	75.1	11 37.2 +22.1	75.3	11 52.3 +23.1	75.5	12 07.2 +24.0	75.7	12 21.9 +25.0	75.9	12 36.4 +25.9	76.1	12 50.7 +26.8	76.3	13 04.7 +27.8	76.6	13 04.7 +27.8	76.6	13 04.7 +27.8	76.6	13 04.7 +27.8	76.6	13 04.7 +27.8	76.6	18		
19	11 43.0 +20.9	74.1	11 59.3 +21.9	74.3	12 15.4 +22.8	74.6	12 31.2 +23.8	74.8	12 46.9 +24.7	75.0	13 02.3 +25.7	75.2	13 17.5 +26.6	75.4	13 32.5 +27.6	75.7	13 32.5 +27.6	75.7	13 32.5 +27.6	75.7	13 32.5 +27.6	75.7	13 32.5 +27.6	75.7	19		
20	12 03.9 +20.8	73.2	12 21.2 +21.7	73.4	12 38.2 +22.7	73.6	12 55.0 +23.6	73.8	13 11.6 +24.6	74.0	13 28.0 +25.5	74.3	13 44.1 +26.5	74.5	14 00.1 +27.3	74.7	14 00.1 +27.3	74.7	14 00.1 +27.3	74.7	14 00.1 +27.3	74.7	14 00.1 +27.3	74.7	20		
21	12 24.7 +20.5	72.2	12 42.9 +21.5	72.4	13 00.9 +22.4	72.7	13 18.6 +23.4	72.9	13 36.2 +24.3	73.1	13 53.5 +25.3	73.3	14 10.6 +26.2	73.6	14 27.4 +27.1	73.8	14 27.4 +27.1	73.8	14 27.4 +27.1	73.8	14 27.4 +27.1	73.8	14 27.4 +27.1	73.8	21		
22	12 45.2 +20.3	71.3	13 04.4 +21.3	71.5	13 23.3 +22.2	71.7	13 42.0 +23.2	71.9	14 00.5 +24.4	72.2	14 18.8 +25.0	72.4	14 36.8 +26.0	72.7	14 54.5 +27.0	72.9	14 54.5 +27.0	72.9	14 54.5 +27.0	72.9	14 54.5 +27.0	72.9	14 54.5 +27.0	72.9	22		
23	13 05.5 +20.2	70.3	13 25.7 +21.0	70.5	13 45.5 +22.1	70.8	14 05.2 +23.0	71.0	14 24.6 +23.9	71.2	14 43.8 +24.9	71.5	15 02.8 +25.7	71.7	15 21.5 +26.6	72.0	15 21.5 +26.6	72.0	15 21.5 +26.6	72.0	15 21.5 +26.6	72.0	15 21.5 +26.6	72.0	23		
24	13 25.7 +19.8	69.3	15 08.7 +19.8	69.5	15 33.3 +20.8	69.9	15 57.6 +21.7	69.6	16 21.7 +22.6	69.5	16 45.6 +23.5	69.7	17 09.1 +24.5	69.8	17 33.6 +25.2	69.9	17 33.6 +25.2	69.9	17 33.6 +25.2	69.9	17 33.6 +25.2	69.9	17 33.6 +25.2	69.9	24		
25	14 45.5 +19.7	68.4	14 07.6 +20.6	68.6	14 29.3 +21.6	68.8	14 50.9 +22.5	69.1	15 12.2 +23.4	69.3	15 33.3 +24.3	69.5	15 53.3 +25.2	69.7	16 14.6 +26.2	69.8	16 14.6 +26.2	69.8	16 14.6 +26.2	69.8	16 14.6 +26.2	69.8	16 14.6 +26.2	69.8	25		
26	14 50.9 +19.4	67.4	14 28.2 +20.3	67.6	14 50.9 +21.3	67.9	15 13.4 +22.2	68.1	15 35.6 +23.2	68.4	15 57.6 +24.1	68.6	16 19.3 +25.1	68.9	16 40.8 +26.9	69.2	16 40.8 +26.9	69.2	16 40.8 +26.9	69.2	16 40.8 +26.9	69.2	16 40.8 +26.9	69.2	26		
27	14 54.4 +19.2	66.4	14 48.5 +20.2	66.7	15 12.2 +21.1	66.9	15 35.6 +22.0	67.2	15 58.8 +22.9	67.4	16 21.7 +23.9	67.7	16 44.4 +24.7	68.0	17 06.7 +25.7	68.2	17 06.7 +25.7	68.2	17 06.7 +25.7	68.2	17 06.7 +25.7	68.2	17 06.7 +25.7	68.2	27		
28	14 43.8 +19.0	65.4	15 08.7 +19.8	65.7	15 33.3 +20.8	65.9	15 57.6 +21.7	66.2	16 21.7 +22.6	66.5	16 45.6 +23.5	66.7	17 09.1 +24.5	67.0	17 32.4 +25.4	67.3	17 32.4 +25.4	67.3	17 32.4 +25.4	67.3	17 32.4 +25.4	67.3	17 32.4 +25.4	67.3	28		
29	15 02.8 +18.7	64.5	15 28.5 +18.6	64.7	15 46.9 +18.4	64.9	16 25.8 +18.2	65.1	17 04.9 +19.0	65.3	17 32.4 +20.6	65.6	18 02.7 +21.3	65.9	18 23.0 +24.8	66.4	18 2										

**LATITUDE CONTRARY NAME TO DECLINATION**

**L.H.A. 85°, 275°**

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z																
0	4 36.1	-23.6	92.0	4 34.0	-24.5	92.0	4 31.8	-25.4	92.1	4 29.6	-26.4	92.2	4 27.2	-27.3	92.3	4 24.8	-28.3	92.4	4 22.3	-29.2	92.4	4 19.7	-30.1	92.5	0
1	4 12.5	-23.6	92.9	4 09.5	-24.6	93.0	4 06.4	-25.6	93.0	4 03.2	-26.5	93.1	3 59.9	-27.4	93.2	3 56.5	-28.3	93.2	3 53.1	-29.3	93.3	3 49.6	-30.2	93.4	1
2	3 48.9	-23.7	93.8	3 44.9	-24.6	93.9	3 40.8	-25.6	93.9	3 36.7	-26.5	94.0	3 32.5	-27.5	94.1	3 28.2	-28.4	94.1	3 23.8	-29.3	94.2	3 19.4	-30.2	94.2	2
3	3 25.2	-23.7	94.7	3 20.3	-24.7	94.8	3 15.2	-25.6	94.8	3 10.2	-26.6	94.9	3 05.0	-27.5	94.9	2 59.8	-28.4	95.0	2 54.5	-29.3	95.1	2 49.2	-30.2	95.1	3
4	3 01.5	-23.8	95.6	2 55.6	-24.7	95.7	2 49.6	-25.7	95.7	2 43.6	-26.6	95.8	2 37.5	-27.5	95.8	2 31.4	-28.5	95.9	2 25.2	-29.4	95.9	2 19.0	-30.3	96.0	4
5	2 37.7	-23.8	96.6	2 30.9	-24.8	96.6	2 23.9	-25.7	96.6	2 17.0	-26.7	96.7	2 10.0	-27.6	96.7	2 02.9	-28.5	96.8	1 55.8	-29.4	96.8	1 48.7	-30.3	96.8	5
6	2 13.9	-23.8	97.5	2 06.1	-24.8	97.5	1 58.2	-25.7	97.6	1 50.3	-26.7	97.6	1 42.4	-27.6	97.6	1 34.4	-28.5	97.6	1 26.4	-29.4	97.7	1 18.4	-30.3	97.7	6
7	1 50.1	-23.9	98.4	1 41.3	-24.8	98.4	1 32.5	-25.8	98.5	1 23.6	-26.7	98.5	1 14.8	-27.6	98.5	1 05.9	-28.5	98.5	0 57.0	-29.5	98.5	0 48.1	-30.4	98.6	7
8	1 26.2	-23.9	99.3	1 16.5	-24.9	99.3	1 06.7	-25.8	99.4	0 56.9	-26.7	99.4	0 47.2	-27.7	99.4	0 37.4	-28.6	99.4	0 27.5	-29.4	99.4	0 17.7	-30.3	99.4	8
9	1 02.3	-23.9	100.2	0 51.6	-24.8	100.2	0 40.9	-25.8	100.3	0 30.2	-26.7	100.3	0 19.5	-27.6	100.3	0 08.8	-28.5	100.3	0 01.9	-29.4	79.7	0 12.6	+30.3	79.7	9
10	0 38.4	-24.0	101.2	0 26.8	-24.9	101.2	0 15.1	-25.8	101.2	0 03.5	-26.7	101.2	0 08.1	+27.6	78.8	0 19.7	+28.6	78.8	0 31.3	+29.5	78.8	0 42.9	+30.4	78.9	10
11	0 14.4	-23.9	102.1	0 01.9	-24.9	102.1	0 10.7	+25.8	77.9	0 23.2	+26.7	77.9	0 35.7	+27.7	77.9	0 48.3	+28.5	78.0	1 00.8	+29.4	78.0	1 13.3	+30.3	78.0	11
12	0 09.5	+23.9	77.0	0 23.0	+24.8	77.0	0 36.5	+25.7	77.0	0 49.9	+26.7	77.0	1 03.4	+27.6	77.1	1 16.8	+28.5	77.1	1 30.2	+29.4	77.1	1 43.6	+30.3	77.1	12
13	0 33.4	+24.0	76.1	0 47.8	+24.9	76.1	1 02.2	+25.8	76.1	1 16.6	+26.7	76.1	1 31.0	+27.6	76.2	1 45.3	+28.5	76.2	1 59.6	+29.4	76.2	2 13.9	+30.2	76.3	13
14	0 57.4	+23.9	75.2	1 12.7	+24.8	75.2	1 28.0	+25.8	75.2	1 43.3	+26.7	75.2	1 58.6	+27.5	75.3	2 13.8	+28.4	75.3	2 29.0	+29.3	75.4	2 44.1	+30.2	75.4	14
15	1 21.3	+23.8	74.3	1 37.5	+24.8	74.3	1 53.8	+25.7	74.3	2 10.0	+26.6	74.4	2 26.1	+27.5	74.4	2 42.2	+28.5	74.4	2 58.3	+29.3	74.5	3 14.3	+30.2	74.5	15
16	1 45.1	+23.9	73.3	2 02.3	+24.8	73.4	2 19.5	+25.7	73.4	2 36.6	+26.6	73.5	2 53.6	+27.5	73.5	3 10.7	+28.3	73.6	3 27.6	+29.3	73.6	3 44.5	+30.1	73.7	16
17	2 09.0	+23.8	72.4	2 27.1	+24.7	72.5	2 45.2	+25.6	72.5	3 03.2	+26.5	72.6	3 21.1	+27.5	72.6	3 39.0	+28.3	72.7	3 56.9	+29.2	72.7	4 14.6	+30.1	72.8	17
18	2 32.8	+23.8	71.5	2 51.8	+24.7	71.6	3 10.8	+25.6	71.6	3 29.7	+26.5	71.7	3 48.6	+27.3	71.7	4 07.3	+28.3	71.8	4 26.1	+29.1	71.9	4 44.7	+30.0	71.9	18
19	2 56.6	+23.8	70.6	3 16.5	+24.7	70.6	3 36.4	+25.5	70.7	3 56.2	+26.4	70.8	4 15.9	+27.3	70.8	4 35.6	+28.2	70.9	4 55.2	+29.1	71.0	5 14.7	+29.9	71.1	19
20	3 20.4	+23.6	69.7	3 41.2	+24.6	69.7	4 01.9	+25.5	69.8	4 22.6	+26.4	69.9	4 43.2	+27.3	69.9	5 03.8	+28.1	70.0	5 24.3	+28.9	70.1	5 44.6	+29.9	70.2	20
21	3 44.0	+23.7	68.7	4 05.8	+24.5	68.8	4 27.4	+25.4	68.9	4 49.0	+26.3	69.0	5 10.5	+27.2	69.0	5 31.9	+28.1	69.1	5 53.2	+29.0	69.2	6 14.5	+29.7	69.3	21
22	4 07.7	+23.5	67.8	4 30.3	+24.4	67.9	4 52.8	+25.4	68.0	5 15.3	+26.2	68.1	5 37.7	+27.1	68.1	6 00.0	+27.9	68.2	6 22.2	+28.8	68.3	6 44.2	+29.7	68.4	22
23	4 31.2	+23.5	66.9	4 54.7	+24.4	67.0	5 18.2	+25.2	67.1	5 41.5	+26.1	67.2	6 04.8	+27.0	67.2	6 27.9	+27.9	67.3	6 51.0	+28.7	67.5	7 13.9	+29.6	67.6	23
24	4 54.7	+23.5	66.0	5 19.1	+24.3	66.1	5 43.4	+25.2	66.2	6 07.6	+26.1	66.2	6 31.8	+26.9	66.3	6 55.8	+27.7	66.5	7 19.7	+28.6	66.6	7 43.5	+29.4	66.7	24
25	5 18.2	+23.3	65.1	5 43.4	+24.2	65.1	6 08.6	+25.1	65.2	6 33.7	+25.9	65.3	6 58.7	+26.8	65.4	7 23.5	+27.7	65.6	7 48.3	+28.5	65.7	8 12.9	+29.4	65.8	25
26	5 41.5	+23.3	64.1	6 07.6	+24.2	64.2	6 33.7	+25.0	64.3	6 59.6	+25.9	64.4	7 25.5	+26.7	64.5	7 51.2	+27.5	64.7	8 16.8	+28.4	64.8	8 42.3	+29.2	64.9	26
27	6 04.8	+23.1	63.2	6 31.8	+24.0	63.3	6 58.7	+24.8	63.4	7 25.5	+25.7	63.5	7 52.2	+26.5	63.6	8 18.7	+27.5	63.8	8 45.2	+28.3	63.9	9 11.5	+29.1	64.0	27
28	6 27.9	+23.1	62.3	6 55.8	+23.9	62.4	7 23.5	+24.8	62.5	7 51.2	+25.6	62.6	8 18.7	+26.5	62.7	8 46.2	+27.3	62.9	9 13.5	+28.1	63.0	9 40.6	+29.0	63.2	28
29	6 51.0	+22.9	61.3	7 19.7	+23.8	61.5	7 48.3	+24.6	61.6	8 16.8	+25.5	61.7	8 45.2	+26.3	61.8	9 13.5	+27.1	62.0	9 41.6	+28.0	62.1	10 09.6	+28.8	62.3	29
30	7 13.9	+22.9	60.4	7 43.5	+23.7	60.5	8 12.9	+24.6	60.7	8 42.3	+25.3	60.8	9 11.5	+26.2	60.9	9 40.6	+27.0	61.1	10 09.6	+27.8	61.2	10 38.4	+28.6	61.4	30
31	7 36.8	+22.7	59.5	8 07.2	+23.5	59.6	8 37.5	+24.4	59.7	9 07.6	+25.3	59.8	9 37.7	+26.0	60.0	10 07.6	+26.9	60.3	10 37.4	+27.7	60.5	11 07.0	+28.6	60.5	31
32	7 59.5	+22.6	58.6	8 30.7	+23.4	58.7	9 01.9	+24.2	58.8	9 32.9	+25.0	58.9	10 03.7	+25.9	59.1	10 34.5	+26.7	59.3	11 05.1	+27.5	59.4	11 35.6	+28.3	59.6	32
33	8 22.1	+22.4	57.6	8 54.1	+23.3	57.7	9 26.1	+24.2	57.8	9 57.9	+25.0	58.0	10 29.6	+25.8	58.2	11 01.2	+26.6	58.3	11 32.6	+27.4	58.5	12 03.9	+28.1	58.7	33
34	8 44.5	+22.3	56.7	9 17.4	+23.1	56.8	9 50.2	+23.9	57.0	10 22.9	+24.7	57.1	10 55.4	+25.8	57.3	11 27.8	+26.3	57.4	12 00.0	+27.2	57.6	12 32.0	+28.0	57.8	34
35	9 06.8	+22.2	55.7	9 40.5	+23.0	55.9	10 14.1	+23.8	56.0	10 47.6	+24.6	56.2	11 20.9	+25.4	56.3	11 54.1	+26.2	56.5	12 27.2	+27.0	56.7	13 00.0	+27.8	56.9	35
36	9 29.0	+22.0	54.8	10 03.5	+22.9	54.9	10 37.9	+23.7	55.1	11 12.2	+24.4	55.2	11 46.3	+25.3	55.4	12 20.3	+26.0	55.6	12 54.2	+26.8	55.8	13 27.8	+27.6	56.0	36
37	9 51.0	+21.9	53.9	10 26.4	+22.6	54.0	11 06.1	+23.4	54.2	11 36.6	+24.3	54.3	12 11.6	+25.0	54.5	12 46.3	+25.9	54.7	13 21.0	+26.6	54.9	13 55.4	+27.4	55.1	37
38	10 12.9	+21.7	52.9	10 49.0	+22.5	53.1	11 25.0	+23.3	53.2	12 00.9	+24.0	53.4	12 36.6	+24.8	53.6	13 12.2	+25.6	53.7	13 47.6</td						

86°, 274° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	3 40.9 +23.5	91.6	3 39.2 +24.4	91.6	3 37.5 +25.4	91.7	3 35.7 +26.3	91.8	3 33.8 +27.3	91.8	3 31.9 +28.2	91.9	3 29.9 +29.1	91.9	3 27.8 +30.0	92.0	3 25.7 +30.9	92.0	3 23.7 +30.0	92.0	3 21.7 +29.9	92.0	3 19.7 +29.8	92.0	0
1	4 04.4 +23.4	90.6	4 03.6 +24.4	90.7	4 02.9 +25.3	90.8	4 02.0 +26.3	90.9	4 01.1 +27.2	90.9	4 00.1 +28.1	91.0	3 59.0 +29.0	91.1	3 57.8 +29.0	91.1	3 55.7 +29.0	91.1	3 53.7 +29.0	91.1	3 51.7 +29.0	91.1	3 49.7 +29.0	91.1	1
2	4 27.8 +23.3	89.7	4 28.0 +24.3	89.8	4 28.2 +25.2	89.9	4 28.3 +26.2	90.0	4 28.3 +27.1	90.0	4 28.2 +28.1	90.1	4 28.0 +29.0	90.2	4 27.8 +29.9	90.3	4 27.6 +29.9	90.3	4 27.4 +29.9	90.3	4 27.2 +29.9	90.3	4 27.0 +29.9	90.3	2
3	4 51.1 +23.2	88.8	4 52.3 +24.2	88.9	4 53.4 +25.2	89.0	4 54.5 +26.1	89.1	4 55.4 +27.1	89.1	4 56.3 +28.0	89.2	4 57.0 +29.0	89.3	4 57.7 +29.9	89.4	4 58.4 +29.9	89.4	4 59.1 +29.9	89.4	4 59.8 +29.9	89.4	4 59.5 +29.9	89.4	3
4	5 14.3 +23.2	87.9	5 16.5 +24.2	88.0	5 18.6 +25.1	88.1	5 20.6 +26.0	88.1	5 22.5 +27.0	88.2	5 24.3 +27.9	88.3	5 26.0 +28.8	88.4	5 27.6 +29.7	88.5	5 27.6 +29.7	88.5	5 27.6 +29.7	88.5	5 27.6 +29.7	88.5	5 27.6 +29.7	88.5	4
5	5 37.5 +23.1	86.9	5 40.7 +24.0	87.0	5 43.7 +25.0	87.1	5 46.6 +26.0	87.2	5 49.5 +26.9	87.3	5 52.2 +27.9	87.4	5 54.8 +28.8	87.5	5 57.3 +29.7	87.7	5 57.3 +29.7	87.7	5 57.3 +29.7	87.7	5 57.3 +29.7	87.7	5 57.3 +29.7	87.7	5
6	6 00.6 +23.0	86.0	6 04.7 +24.0	86.1	6 08.7 +24.9	86.2	6 12.6 +25.9	86.3	6 16.4 +26.8	86.4	6 20.1 +27.7	86.6	6 23.6 +28.7	86.7	6 27.0 +29.6	86.8	6 27.0 +29.6	86.8	6 27.0 +29.6	86.8	6 27.0 +29.6	86.8	6 27.0 +29.6	86.8	6
7	6 23.6 +22.9	85.1	6 28.7 +23.8	85.2	6 33.6 +24.9	85.3	6 38.5 +25.7	85.4	6 43.2 +26.7	85.5	6 47.8 +27.7	85.7	6 52.3 +28.6	85.8	6 56.6 +29.5	85.9	6 56.6 +29.5	85.9	6 56.6 +29.5	85.9	6 56.6 +29.5	85.9	6 56.6 +29.5	85.9	7
8	6 46.5 +22.8	84.2	6 52.5 +23.8	84.3	6 58.5 +24.7	84.4	7 04.2 +25.7	84.5	7 09.9 +26.6	84.6	7 15.5 +27.5	84.8	7 20.9 +28.4	84.9	7 26.1 +29.4	85.0	7 26.1 +29.4	85.0	7 26.1 +29.4	85.0	7 26.1 +29.4	85.0	7 26.1 +29.4	85.0	8
9	7 09.3 +22.6	83.2	7 16.3 +23.6	83.3	7 23.2 +24.6	83.5	7 29.9 +25.6	83.6	7 36.5 +26.5	83.7	7 43.0 +27.4	83.9	7 49.3 +28.4	84.0	7 55.5 +29.3	84.1	7 55.5 +29.3	84.1	7 55.5 +29.3	84.1	7 55.5 +29.3	84.1	7 55.5 +29.3	84.1	9
10	7 31.9 +22.6	82.3	7 39.9 +23.5	82.4	7 47.8 +24.4	82.6	7 55.5 +25.4	82.7	8 03.0 +26.4	82.8	8 10.4 +27.4	83.0	8 17.7 +28.2	83.1	8 24.8 +29.2	83.3	8 24.8 +29.2	83.3	8 24.8 +29.2	83.3	8 24.8 +29.2	83.3	8 24.8 +29.2	83.3	10
11	7 54.5 +22.4	81.4	8 03.4 +23.4	81.5	8 12.2 +24.4	81.6	8 20.9 +25.3	81.8	8 29.4 +26.3	81.9	8 37.8 +27.1	82.1	8 45.9 +28.2	82.2	8 54.0 +29.0	82.4	8 54.0 +29.0	82.4	8 54.0 +29.0	82.4	8 54.0 +29.0	82.4	8 54.0 +29.0	82.4	11
12	8 16.9 +22.3	80.4	8 26.8 +23.3	80.6	8 36.6 +24.2	80.7	8 46.2 +25.2	80.9	8 55.7 +26.1	81.0	9 04.9 +27.1	81.2	9 14.1 +28.0	81.3	9 23.0 +28.9	81.5	9 23.0 +28.9	81.5	9 23.0 +28.9	81.5	9 23.0 +28.9	81.5	9 23.0 +28.9	81.5	12
13	8 39.2 +22.2	79.5	8 50.1 +23.1	79.6	9 00.8 +24.1	79.8	9 11.4 +25.0	79.9	9 21.8 +25.9	80.1	9 32.0 +26.9	80.3	9 42.1 +27.8	80.4	9 51.9 +28.8	80.6	9 51.9 +28.8	80.6	9 51.9 +28.8	80.6	9 51.9 +28.8	80.6	9 51.9 +28.8	80.6	13
14	9 01.4 +22.0	78.5	9 13.2 +23.0	78.7	9 24.9 +23.9	78.9	9 36.4 +24.9	79.0	9 47.7 +25.9	79.2	9 58.9 +26.8	79.4	10 09.9 +27.7	79.5	10 20.7 +28.6	79.7	10 20.7 +28.6	79.7	10 20.7 +28.6	79.7	10 20.7 +28.6	79.7	10 20.7 +28.6	79.7	14
15	9 23.4 +21.9	77.6	9 36.2 +22.8	77.8	9 48.8 +23.8	77.9	10 01.3 +24.7	78.1	10 13.6 +25.7	78.3	10 25.7 +26.6	78.5	10 37.6 +27.5	78.6	10 49.3 +28.5	78.8	10 49.3 +28.5	78.8	10 49.3 +28.5	78.8	10 49.3 +28.5	78.8	10 49.3 +28.5	78.8	15
16	9 45.3 +21.7	76.7	9 59.0 +22.7	76.8	10 12.6 +23.6	77.0	10 26.0 +24.6	77.2	10 39.3 +25.5	77.4	10 52.3 +26.5	77.5	11 05.1 +27.4	77.7	11 17.8 +28.3	77.9	11 17.8 +28.3	77.9	11 17.8 +28.3	77.9	11 17.8 +28.3	77.9	11 17.8 +28.3	77.9	16
17	10 07.0 +21.5	75.7	10 21.7 +22.5	75.9	10 36.2 +23.5	76.1	10 50.6 +24.4	76.2	11 04.8 +25.3	76.4	11 18.8 +26.2	76.6	11 32.5 +27.2	76.8	11 46.1 +28.1	77.0	11 46.1 +28.1	77.0	11 46.1 +28.1	77.0	11 46.1 +28.1	77.0	11 46.1 +28.1	77.0	17
18	10 28.5 +21.4	74.8	10 44.2 +22.3	74.9	10 59.7 +23.3	75.1	11 15.0 +24.2	75.3	11 30.1 +25.2	75.5	11 45.0 +26.1	75.7	11 59.7 +27.1	75.9	12 14.2 +28.0	76.1	12 14.2 +28.0	76.1	12 14.2 +28.0	76.1	12 14.2 +28.0	76.1	12 14.2 +28.0	76.1	18
19	10 49.9 +21.2	73.8	11 06.5 +22.2	74.0	11 23.0 +23.1	74.1	11 39.2 +24.1	74.4	11 55.3 +25.0	74.6	12 11.6 +26.0	74.8	12 26.8 +26.8	75.0	12 42.2 +27.8	75.2	12 42.2 +27.8	75.2	12 42.2 +27.8	75.2	12 42.2 +27.8	75.2	19		
20	11 11.1 +21.0	72.9	11 28.7 +22.0	73.0	11 46.1 +22.9	73.2	12 03.3 +23.9	73.4	12 20.3 +24.8	73.7	12 37.1 +25.7	73.9	12 53.6 +26.7	74.1	13 10.0 +27.6	74.3	13 10.0 +27.6	74.3	13 10.0 +27.6	74.3	13 10.0 +27.6	74.3	13 10.0 +27.6	74.3	20
21	11 32.1 +20.9	71.9	11 50.7 +21.7	72.1	12 09.0 +22.7	72.3	12 27.2 +23.6	72.5	12 45.1 +24.6	72.7	13 02.8 +25.5	72.9	13 20.3 +26.5	73.2	13 37.6 +27.3	73.4	13 37.6 +27.3	73.4	13 37.6 +27.3	73.4	13 37.6 +27.3	73.4	13 37.6 +27.3	73.4	21
22	11 53.0 +20.6	70.9	12 12.4 +21.6	71.1	12 31.7 +22.6	71.3	12 50.8 +23.5	71.6	13 09.7 +24.4	71.8	13 28.3 +25.4	72.0	13 46.8 +26.2	72.2	14 04.9 +27.2	72.5	14 32.1 +27.2	72.5	14 32.1 +27.2	72.5	14 32.1 +27.2	72.5	14 32.1 +27.2	72.5	22
23	12 13.6 +20.4	70.0	12 34.0 +21.4	70.2	12 54.3 +22.3	70.4	13 14.3 +23.2	70.6	13 34.1 +24.2	70.8	13 53.7 +25.1	71.1	14 13.0 +26.0	71.3	14 32.1 +27.0	71.6	14 32.1 +27.0	71.6	14 32.1 +27.0	71.6	14 32.1 +27.0	71.6	14 32.1 +27.0	71.6	23
24	12 34.0 +20.3	69.0	12 55.4 +21.2	69.2	13 16.6 +22.1	69.4	13 37.5 +23.1	69.7	13 58.3 +23.9	69.9	14 18.8 +24.9	70.1	14 39.0 +25.9	70.4	14 59.1 +26.7	70.6	14 59.1 +26.7	70.6	14 59.1 +26.7	70.6	14 59.1 +26.7	70.6	14 59.1 +26.7	70.6	24
25	12 54.3 +20.0	68.1	13 16.6 +20.9	68.3	13 38.7 +21.9	68.5	14 00.6 +22.8	68.7	14 22.2 +23.8	69.0	14 43.7 +24.6	69.2	15 04.9 +25.5	69.4	15 25.8 +26.5	69.7	15 25.8 +26.5	69.7	15 25.8 +26.5	69.7	15 25.8 +26.5	69.7	15 25.8 +26.5	69.7	25
26	13 14.3 +19.8	67.1	13 37.5 +20.8	67.3	14 00.6 +21.6	67.5	14 23.4 +22.6	67.8	14 46.0 +23.5	68.0	15 08.3 +24.3	68.3	15 30.4 +25.4	68.5	15 52.3 +26.3	68.8	15 52.3 +26.3	68.8	15 52.3 +26.3	68.8	15 52.3 +26.3	68.8	15 52.3 +26.3	68.8	26
27	13 34.1 +19.6	66.1	13 58.3 +20.5	66.3	14 22.2 +21.5	66.6	14 46.0 +22.3	66.8	15 09.5 +23.3	67.1	15 32.8 +24.2	67.3	15 55.8 +25.1	67.6	16 18.6 +26.0	67.8	16 18.6 +26.0	67.8	16 18.6 +26.0	67.8	16 18.6 +26.0	67.8	16 18.6 +26.0	67.8	27
28	13 53.7 +19.3	65.1	14 18.8 +20.2	65.4	14 43.7 +21.2	65.6	15 08.3 +22.1	65.8	15 32.8 +23.0	66.1	15 57.0 +23.9	66.4	16 20.9 +24.8	66.6	16 44.6 +25.7	66.9	16 44.6 +25.7	66.9	16 44.6 +25.7	66.9	16 44.6 +25.7	66.9	16 44.6 +25.7	66.9	28
29	14 13.0 +19.1	64.2	14 39.0 +20.1	64.4	15 04.9 +20.9	64.6	15 30.4 +21.9	64.6	15 55.8 +22.8	65.1	16 20.9 +23.7	65.4	16 45.7 +24.6	65.7	17 10.3 +25.5	66.0	17 35.8 +25.2	66.5	17 35.8 +25.2	66.5	17 35.8 +25.2	66.5	17 35.8 +25.2	66.5	30
30	14 32.1																								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 86°, 274°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.		
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z			
0	3 40.9 -23.5	91.6	3 39.2 -24.5	91.6	3 37.5 -25.5	91.7	3 35.7 -26.4	91.8	3 33.8 -27.3	91.8	3 31.9 -28.3	91.9	3 29.9 -29.2	91.9	3 27.8 -30.1	92.0	3 25.7 -30.1	92.9	2 27.6 -30.1	93.7	2 25.7 -30.1	92.9	1				
1	3 17.4 -23.6	92.5	3 14.7 -24.5	92.5	3 12.0 -25.4	92.6	3 09.3 -26.4	92.7	3 06.5 -27.4	92.7	3 03.6 -28.3	92.8	3 00.7 -29.2	92.8	2 23.5 -29.2	93.7	2 21.4 -29.2	93.7	2 19.3 -29.2	94.6	1 17.5 -30.2	94.6	1 15.5 -30.2	95.5	4		
2	2 53.8 -23.6	93.4	2 50.2 -24.6	93.5	2 46.6 -25.6	93.5	2 42.9 -26.5	93.6	2 39.1 -27.4	93.6	2 35.3 -28.3	93.6	2 31.5 -29.2	93.7	2 27.6 -30.1	93.7	2 25.7 -30.1	94.6	2 23.6 -30.2	95.5	1 21.3 -30.2	95.5	1 19.3 -30.2	96.3	5		
3	2 30.2 -23.7	94.3	2 25.6 -24.6	94.4	2 21.0 -25.5	94.4	2 16.4 -26.5	94.5	2 11.7 -27.4	94.5	2 07.0 -28.3	94.5	2 02.3 -29.3	94.6	1 33.0 -29.3	95.4	1 27.3 -30.2	95.5	1 25.3 -30.2	96.3	0 57.1 -30.2	96.3	0 55.1 -30.2	97.2	6		
4	2 06.5 -23.7	95.2	2 01.0 -24.6	95.3	1 55.5 -25.6	95.3	1 49.9 -26.5	95.4	1 44.3 -27.5	95.4	1 38.7 -28.4	95.4	1 33.0 -29.3	95.4	0 57.1 -30.2	96.3	0 55.1 -30.2	97.2	0 33.0 -30.2	97.2	0 31.0 -30.2	98.1	0 03.3 +30.3	81.9	7		
5	1 42.8 -23.7	96.2	1 36.4 -24.7	96.2	1 29.9 -25.6	96.2	1 23.4 -26.6	96.2	1 16.8 -27.4	96.3	1 10.3 -28.4	96.3	1 03.7 -29.3	96.3	0 57.1 -30.2	96.3	0 33.6 +30.2	81.1	0 31.6 +30.2	81.1	0 29.6 +30.2	81.1	0 03.8 +30.2	80.2	9		
6	1 19.1 -23.7	97.1	1 11.7 -24.7	97.1	1 04.3 -25.6	97.1	0 56.8 -26.5	97.1	0 49.4 -27.5	97.2	0 41.9 -28.4	97.2	0 34.4 -29.3	97.2	1 34.0 +30.1	79.4	1 32.0 +30.1	78.5	1 29.4 +30.1	77.6	1 26.4 +30.1	76.8	1 04.4 +30.1	76.8	1 02.4 +30.1	75.9	14
7	0 55.4 -23.7	98.0	0 47.0 -24.7	98.0	0 38.7 -25.7	98.0	0 30.3 -26.6	98.0	0 21.9 -27.5	98.0	0 13.5 -28.4	98.1	0 05.1 -29.4	98.1	0 03.3 +30.3	81.9	0 33.6 +30.2	81.1	0 31.6 +30.2	81.1	0 29.6 +30.2	81.1	0 03.8 +30.2	80.2	9		
8	0 31.7 -23.8	98.9	0 22.3 -24.7	98.9	0 13.0 -25.6	98.9	0 03.7 -26.6	98.9	0 05.6 +27.5	81.1	0 14.9 +28.4	81.1	0 24.3 +29.3	81.1	0 22.0 +29.3	80.2	0 33.1 +27.5	80.2	0 43.3 +28.4	80.2	0 53.6 +29.3	80.2	1 03.8 +30.2	80.2	1 01.8 +30.2	80.2	9
9	0 07.9 -23.8	99.8	0 02.4 +24.7	80.2	0 12.6 +25.7	80.2	0 22.9 +26.5	80.2	0 33.1 +27.5	80.2	0 43.3 +28.4	80.2	0 53.6 +29.3	80.2	1 34.0 +30.1	79.4	1 32.0 +30.1	78.5	1 29.4 +30.1	77.6	1 26.4 +30.1	76.8	1 04.4 +30.1	76.8	1 02.4 +30.1	75.9	14
10	0 15.9 +23.7	79.2	0 27.1 +24.7	79.2	0 38.3 +25.6	79.3	0 49.4 +26.6	79.3	1 00.6 +27.5	79.3	1 11.7 +28.4	79.3	1 22.9 +29.2	79.3	1 34.0 +30.1	79.4	1 32.0 +30.1	78.5	1 29.4 +30.1	77.6	1 26.4 +30.1	76.8	1 04.4 +30.1	76.8	1 02.4 +30.1	75.9	14
11	0 39.6 +23.8	78.3	0 51.8 +24.6	78.3	1 03.9 +25.6	78.4	1 16.0 +26.5	78.4	1 28.1 +27.4	78.4	1 40.1 +28.4	78.4	1 52.1 +29.3	78.5	2 04.1 +30.2	78.5	2 34.3 +30.1	77.6	2 31.4 +30.1	76.8	2 28.4 +30.1	76.8	2 04.3 +30.1	76.8	13		
12	1 03.4 +23.7	77.4	1 16.4 +24.7	77.4	1 29.5 +25.6	77.4	1 42.5 +26.5	77.5	1 55.5 +27.4	77.5	2 08.5 +28.3	77.5	2 21.4 +29.2	77.6	3 04.4 +30.1	76.8	3 34.5 +30.0	75.9	3 31.5 +30.0	75.9	3 28.4 +30.0	75.9	3 04.3 +30.0	75.9	14		
13	1 27.1 +23.7	76.5	1 41.1 +24.6	76.5	1 55.1 +25.5	76.5	2 09.0 +26.5	76.6	2 22.9 +27.4	76.6	2 36.8 +28.3	76.7	2 50.6 +29.2	76.7	3 04.4 +30.1	76.8	3 34.5 +30.0	75.9	3 31.5 +30.0	75.9	3 28.4 +30.0	75.9	3 04.3 +30.0	75.9	14		
14	1 50.8 +23.7	75.6	2 05.7 +24.6	75.6	2 20.6 +25.6	75.6	2 35.5 +26.4	75.7	2 50.3 +27.4	75.7	3 05.1 +28.2	75.8	3 19.8 +29.1	75.8	4 04.5 +30.1	75.9	4 34.4 +30.0	75.9	4 31.4 +30.0	75.9	4 28.3 +30.0	75.9	4 04.3 +30.0	75.9	14		
15	2 14.5 +23.6	74.6	2 30.3 +24.6	74.7	2 46.2 +25.4	74.7	3 01.9 +26.4	74.8	3 17.7 +27.3	74.8	3 33.3 +28.2	74.9	3 48.9 +29.1	75.0	4 04.5 +29.9	75.0	4 34.4 +29.9	75.0	4 31.4 +29.9	75.0	4 28.3 +29.9	75.0	4 04.3 +29.9	75.0	15		
16	2 38.1 +23.6	73.7	2 54.9 +24.5	73.8	3 11.6 +25.5	73.8	3 28.3 +26.4	73.9	3 45.0 +27.2	73.9	4 01.5 +28.2	74.0	4 18.0 +29.0	74.1	4 34.4 +29.9	74.2	4 31.4 +29.9	74.2	4 28.3 +29.9	74.2	4 05.3 +29.9	74.2	16				
17	3 01.7 +23.6	72.8	3 19.4 +24.5	72.9	3 37.1 +25.4	72.9	3 54.7 +26.3	73.0	4 12.2 +27.2	73.0	4 29.7 +28.0	73.1	4 47.0 +29.0	73.2	5 04.3 +29.9	73.3	5 34.2 +29.7	72.4	5 31.1 +29.7	72.4	5 28.0 +29.7	72.4	5 04.2 +29.7	72.4	17		
18	3 25.3 +23.5	71.9	3 43.9 +24.4	71.9	4 02.5 +25.3	72.0	4 21.0 +26.2	72.1	4 39.4 +27.1	72.2	4 57.7 +28.0	72.2	5 16.0 +28.9	72.3	5 34.2 +29.7	72.4	5 31.1 +29.7	72.4	5 28.0 +29.7	72.4	5 04.1 +29.7	72.4	18				
19	3 48.8 +23.4	71.0	4 08.3 +24.4	71.0	4 27.8 +25.2	71.1	4 47.2 +26.1	71.2	5 06.5 +27.0	71.3	5 25.7 +28.0	71.3	5 44.9 +28.8	71.4	6 03.9 +29.7	71.5	6 33.6 +29.6	70.7	6 30.5 +29.6	70.7	6 27.4 +29.6	70.7	6 03.8 +29.6	70.7	20		
20	4 12.2 +23.4	70.0	4 32.7 +24.2	70.1	4 53.0 +25.2	70.2	5 13.3 +26.1	70.3	5 33.5 +27.0	70.4	5 53.7 +27.8	70.5	6 13.7 +28.7	70.6	6 33.6 +29.6	70.7	6 30.5 +29.6	70.7	6 27.4 +29.6	70.7	6 03.2 +29.5	69.8	21				
21	4 35.6 +23.3	69.1	4 56.9 +24.2	69.2	5 18.2 +25.1	69.3	5 39.4 +26.0	69.4	6 00.5 +26.9	69.5	6 21.5 +27.7	69.6	6 42.4 +28.6	69.7	7 03.2 +29.5	69.8	7 32.7 +29.3	68.9	7 30.6 +29.3	68.9	7 28.5 +29.3	68.9	7 04.4 +29.3	68.9	22		
22	4 58.9 +23.2	68.2	5 21.1 +24.2	68.3	5 43.3 +25.0	68.4	6 05.4 +25.9	68.5	6 27.4 +26.7	68.6	6 49.2 +27.7	68.7	7 11.0 +28.5	68.8	7 32.7 +29.3	68.9	7 30.6 +29.3	68.9	7 28.5 +29.3	68.9	7 04.4 +29.3	68.9	23				
23	5 22.1 +23.2	67.3	5 45.3 +24.0	67.4	6 08.3 +24.9	67.5	6 31.3 +25.8	67.6	6 54.1 +26.7	67.7	7 16.9 +27.5	67.8	7 39.5 +28.4	67.9	8 02.0 +29.3	68.0	8 31.3 +29.1	68.1	8 29.2 +29.1	68.1	8 27.1 +29.1	68.1	8 03.9 +29.1	68.1	24		
24	5 45.3 +23.0	66.3	6 09.3 +23.9	66.4	6 33.2 +24.9	66.5	6 57.1 +25.7	66.6	7 20.8 +26.6	66.8	7 44.4 +27.5	66.9	8 07.9 +28.3	67.0	8 31.3 +28.0	67.1	8 29.2 +28.0	67.1	8 27.1 +28.0	67.1	8 03.8 +28.0	67.1	25				
25	6 08.3 +23.0	65.4	6 33.2 +23.9	65.5	6 58.1 +24.7	65.6	7 22.8 +25.6	65.7	7 47.4 +26.4	65.9	8 11.9 +27.3	66.0	8 36.2 +28.2	66.1	9 00.4 +29.0	66.3	9 34.3 +28.8	66.4	9 32.2 +28.8	66.4	9 10.2 +28.8	66.4	9 00.1 +28.8	66.4	25		
26	6 31.3 +22.8	64.5	6 57.1 +23.7	64.6	7 22.8 +24.6	64.7	7 48.4 +25.4	64.8	8 13.8 +26.3	64.9	8 39.2 +27.1	65.1	9 04.4 +28.0	65.2	9 34.4 +28.8	65.3	9 32.3 +28.8	65.3	9 10.3 +28.8	65.3	9 00.2 +28.8	65.3	26				
27	6 54.1 +22.8	63.6	7 20.8 +23.6	63.7	7 47.4 +24.5	63.8	8 13.8 +25.4	63.9	8 40.1 +26.2	64.0	9 06.3 +27.1	64.2	9 32.4 +27.9	64.3	10 00.3 +28.0	64.3	10 30.3 +28.0	64.3	10 28.2 +28.0	64.3	10 06.2 +28.0	64.3	27				
28	7 16.9 +22.6	62.6	7 44.4 +23.5	62.7	8 11.9 +24.3	62.9	8 39.2 +25.2	63.0	9 06.3 +26.1	63.1	9 33.4 +26.9	63.3	10 00.3 +26.8	63.4	10 27.1 +26.8	63.5	10 25.0 +26.8	63.5	10 22.9 +26.8	63.5	10 06.8 +26.8	63.5	28				
29	7 39.5 +22.5	61.7	8 07.9 +23.4	61.8	8 36.2 +24.2	61.9	9 04.4 +25.0	62.1	9 32.4 +25.9	62.2	10 00.3 +26.8	62.4	10 28.1 +26.6	62.5	10 55.7 +26.4	62.6	10 33.6 +26.4	62.7	10 21.5 +26.4	62.7	10 08.4 +26.4	62.7	29				
30	8 02.0 +22.4	60.7	8 31.3 +23.2	60.9	9 00.4 +24.1	61.0	9 29.4 +25.0	61.2	9 58.3 +25.8	61.3	10 27.1 +26.6	61.5	10 55.7 +27.4	61.6	11 24.1 +28.3	61.8	11 32.0 +28.3	61.9	11 20.9 +28.3	62.0	11 07.8 +28.3	62.0	30				
31	8 24.4 +22.3	59.8	8 54.5 +23.1	59.9	9 24																						

87°, 273° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	2 45.7 +23.4	91.2	2 44.4 +24.4	91.2	2 43.1 +25.4	91.3	2 41.8 +26.3	91.3	2 40.4 +27.2	91.4	2 38.9 +28.2	91.4	2 37.4 +29.1	91.5	2 35.9 +30.0	91.5	2 35.9 +30.0	91.5	2 35.9 +30.0	91.5	2 35.9 +30.0	91.5	2 35.9 +30.0	91.5	0
1	3 09.1 +23.4	90.3	3 08.8 +24.4	90.3	3 08.5 +25.3	90.4	3 08.1 +26.2	90.4	3 07.6 +27.2	90.5	3 07.1 +28.1	90.5	3 06.5 +29.1	90.6	3 05.9 +29.9	90.6	3 05.9 +29.9	90.6	3 05.9 +29.9	90.6	3 05.9 +29.9	90.6	3 05.9 +29.9	90.6	1
2	3 32.5 +23.4	89.3	3 33.2 +24.3	89.4	3 33.8 +25.3	89.5	3 34.3 +26.3	89.5	3 34.8 +27.2	89.6	3 35.2 +28.1	89.6	3 35.6 +29.0	89.7	3 35.8 +30.0	89.8	3 35.8 +30.0	89.8	3 35.8 +30.0	89.8	3 35.8 +30.0	89.8	3 35.8 +30.0	89.8	2
3	3 55.9 +23.3	88.4	3 57.5 +24.3	88.5	3 59.1 +25.2	88.5	4 00.6 +26.1	88.6	4 02.0 +27.1	88.7	4 03.3 +28.0	88.8	4 04.6 +28.9	88.8	4 05.8 +29.8	88.9	4 05.8 +29.8	88.9	4 05.8 +29.8	88.9	4 05.8 +29.8	88.9	4 05.8 +29.8	88.9	3
4	4 19.2 +23.2	87.5	4 21.8 +24.1	87.6	4 24.3 +25.1	87.6	4 26.7 +26.1	87.7	4 29.1 +27.0	87.8	4 31.3 +28.0	87.9	4 33.5 +28.9	87.9	4 35.6 +29.8	88.0	4 35.6 +29.8	88.0	4 35.6 +29.8	88.0	4 35.6 +29.8	88.0	4		
5	4 42.4 +23.1	86.6	4 45.9 +24.1	86.6	4 49.4 +25.1	86.7	4 52.8 +26.0	86.8	4 56.1 +26.9	86.9	4 59.3 +27.9	87.0	5 02.4 +28.8	87.1	5 05.4 +29.8	87.2	5 05.4 +29.8	87.2	5 05.4 +29.8	87.2	5 05.4 +29.8	87.2	5		
6	5 05.5 +23.1	85.6	5 10.0 +24.1	85.7	5 14.5 +25.0	85.8	5 18.8 +25.9	85.9	5 23.0 +26.9	86.0	5 27.2 +27.8	86.1	5 31.2 +28.8	86.2	5 35.2 +29.6	86.3	5 35.2 +29.6	86.3	5 35.2 +29.6	86.3	5 35.2 +29.6	86.3	6		
7	5 28.6 +23.0	84.7	5 34.1 +23.9	84.8	5 39.5 +24.9	84.9	5 44.7 +25.9	85.0	5 49.9 +26.8	85.1	5 55.0 +27.7	85.2	6 00.0 +28.6	85.3	6 04.8 +29.6	85.4	6 04.8 +29.6	85.4	6 04.8 +29.6	85.4	6 04.8 +29.6	85.4	7		
8	5 51.6 +22.8	83.8	5 58.0 +23.9	83.9	6 04.4 +24.8	84.0	6 10.6 +25.7	84.1	6 16.7 +26.7	84.2	6 22.7 +27.6	84.3	6 28.6 +28.6	84.4	6 34.4 +29.5	84.5	6 34.4 +29.5	84.5	6 34.4 +29.5	84.5	6 34.4 +29.5	84.5	8		
9	6 14.4 +22.8	82.8	6 21.9 +23.7	83.0	6 29.2 +24.7	83.1	6 36.3 +25.7	83.2	6 43.4 +26.6	83.3	6 50.3 +27.6	83.4	6 57.2 +28.4	83.5	7 03.9 +29.3	83.7	7 03.9 +29.3	83.7	7 03.9 +29.3	83.7	7 03.9 +29.3	83.7	9		
10	6 37.2 +22.7	81.9	6 45.6 +23.7	82.0	6 53.9 +24.6	82.1	7 02.0 +25.6	82.3	7 10.0 +26.5	82.4	7 17.9 +27.4	82.5	7 25.6 +28.4	82.6	7 33.2 +29.3	82.8	7 33.2 +29.3	82.8	7 33.2 +29.3	82.8	7 33.2 +29.3	82.8	10		
11	6 59.9 +22.6	81.0	7 09.3 +23.5	81.1	7 18.5 +24.5	81.2	7 27.6 +25.4	81.4	7 36.5 +26.4	81.5	7 45.3 +27.3	81.6	7 54.0 +28.2	81.8	8 02.5 +29.2	81.9	8 02.5 +29.2	81.9	8 02.5 +29.2	81.9	8 02.5 +29.2	81.9	11		
12	7 22.5 +22.4	80.0	7 32.8 +23.4	80.2	7 43.0 +24.3	80.3	7 53.0 +25.3	80.4	8 02.9 +26.2	80.6	8 12.6 +27.2	80.7	8 22.2 +28.1	80.9	8 31.7 +29.0	81.0	8 31.7 +29.0	81.0	8 31.7 +29.0	81.0	8 31.7 +29.0	81.0	12		
13	7 44.9 +22.4	79.1	7 56.2 +23.3	79.2	8 07.3 +24.3	79.4	8 18.3 +25.2	79.5	8 29.1 +26.2	79.7	8 39.8 +27.1	79.8	8 50.3 +28.0	80.0	9 00.7 +28.9	80.1	9 00.7 +28.9	80.1	9 00.7 +28.9	80.1	9 00.7 +28.9	80.1	13		
14	8 07.3 +22.2	78.2	8 19.5 +23.2	78.3	8 31.6 +24.1	78.5	8 43.5 +25.1	78.6	8 55.3 +26.0	78.8	9 06.9 +26.9	78.9	9 18.3 +27.9	79.1	9 29.6 +28.8	79.2	9 29.6 +28.8	79.2	9 29.6 +28.8	79.2	9 29.6 +28.8	79.2	14		
15	8 29.5 +22.1	77.2	8 42.7 +23.0	77.4	8 55.7 +24.0	77.5	9 08.6 +24.9	77.7	9 21.3 +25.8	77.9	9 33.8 +26.8	78.0	9 46.2 +27.7	78.2	9 58.4 +28.6	78.4	9 58.4 +28.6	78.4	9 58.4 +28.6	78.4	9 58.4 +28.6	78.4	15		
16	8 51.6 +21.9	76.3	9 05.7 +22.9	76.5	9 19.7 +23.8	76.6	9 33.5 +24.8	76.8	9 47.1 +25.8	76.9	10 00.6 +26.7	77.1	10 13.9 +27.6	77.3	10 27.0 +28.5	77.5	10 27.0 +28.5	77.5	10 27.0 +28.5	77.5	10 27.0 +28.5	77.5	16		
17	9 13.5 +21.8	75.4	9 28.6 +22.7	75.5	9 43.5 +23.7	75.7	9 58.3 +24.6	75.8	10 12.9 +25.5	76.0	10 27.3 +26.4	76.2	10 41.5 +27.4	76.4	10 55.5 +28.3	76.6	10 55.5 +28.3	76.6	10 55.5 +28.3	76.6	10 55.5 +28.3	76.6	17		
18	9 35.3 +21.6	74.4	9 51.3 +22.6	74.6	10 07.2 +23.5	74.7	10 22.9 +24.5	74.9	10 38.4 +25.4	75.1	10 53.7 +26.4	75.3	11 08.9 +27.2	75.5	11 23.8 +28.2	75.7	11 23.8 +28.2	75.7	11 23.8 +28.2	75.7	11 23.8 +28.2	75.7	18		
19	9 56.9 +21.5	73.5	10 13.9 +22.4	73.6	10 30.7 +23.4	73.8	10 47.4 +24.2	74.0	11 03.8 +25.2	74.2	11 20.1 +26.1	74.4	11 36.1 +27.1	74.6	11 52.0 +28.0	74.8	11 52.0 +28.0	74.8	11 52.0 +28.0	74.8	11 52.0 +28.0	74.8	19		
20	10 18.4 +21.3	72.5	10 36.3 +22.3	72.7	10 54.1 +23.2	72.9	11 11.6 +24.2	73.1	11 29.0 +25.1	73.3	11 46.2 +26.0	73.4	12 03.2 +26.9	73.7	12 20.0 +27.8	73.9	12 20.0 +27.8	73.9	12 20.0 +27.8	73.9	12 20.0 +27.8	73.9	20		
21	10 39.7 +21.1	71.6	10 58.6 +22.0	71.7	11 17.3 +23.0	71.9	11 35.8 +23.9	72.1	11 54.1 +24.9	72.3	12 12.2 +25.8	72.5	12 30.1 +26.7	72.7	12 47.8 +27.6	72.9	12 47.8 +27.6	72.9	12 47.8 +27.6	72.9	12 47.8 +27.6	72.9	21		
22	11 00.8 +21.0	70.6	11 20.6 +21.9	70.8	11 40.3 +22.8	71.0	11 59.7 +23.8	71.2	12 19.0 +24.6	71.4	12 38.0 +25.6	71.6	12 56.8 +26.6	71.8	13 15.4 +27.5	72.0	13 15.4 +27.5	72.0	13 15.4 +27.5	72.0	13 15.4 +27.5	72.0	22		
23	11 21.8 +20.7	69.7	11 42.5 +21.7	69.8	12 03.1 +22.6	70.0	12 23.5 +23.5	70.2	12 43.6 +24.5	70.5	13 03.6 +25.4	70.7	13 23.4 +26.3	70.9	13 42.9 +27.2	71.1	13 42.9 +27.2	71.1	13 42.9 +27.2	71.1	13 42.9 +27.2	71.1	23		
24	11 42.5 +20.6	68.7	12 04.2 +21.5	68.9	12 25.7 +22.5	69.1	12 47.0 +23.4	69.3	13 08.1 +24.3	69.5	13 29.0 +25.2	69.7	13 49.7 +26.1	70.0	14 10.1 +27.0	70.2	14 10.1 +27.0	70.2	14 10.1 +27.0	70.2	14 10.1 +27.0	70.2	24		
25	12 03.1 +20.4	67.7	12 25.7 +21.3	67.9	12 48.2 +22.2	68.1	13 10.4 +23.1	68.4	13 32.4 +24.1	68.6	13 54.2 +25.0	68.8	14 15.8 +25.9	69.0	14 37.1 +26.8	69.3	14 37.1 +26.8	69.3	14 37.1 +26.8	69.3	14 37.1 +26.8	69.3	25		
26	12 23.5 +20.1	66.8	12 47.0 +21.1	67.0	13 10.4 +22.0	67.2	13 33.5 +23.0	67.4	13 56.5 +23.8	67.6	14 19.2 +24.6	67.9	14 41.7 +25.7	68.1	15 03.9 +26.6	68.4	15 03.9 +26.6	68.4	15 03.9 +26.6	68.4	15 03.9 +26.6	68.4	26		
27	12 43.6 +20.0	65.8	13 08.1 +20.9	66.0	13 32.4 +21.8	66.2	13 56.5 +22.7	66.5	14 20.3 +23.7	66.7	14 40.0 +24.5	66.9	15 07.4 +25.4	67.2	15 30.5 +26.3	67.5	15 30.5 +26.3	67.5	15 30.5 +26.3	67.5	15 30.5 +26.3	67.5	27		
28	13 03.6 +19.8	64.8	13 29.0 +19.7	65.1	13 54.2 +21.6	65.3	14 19.2 +22.5	65.5	14 44.0 +23.4	65.7	15 08.5 +24.3	66.0	15 32.8 +25.2	66.2	15 56.8 +26.1	66.5	15 56.8 +26.1	66.5	15 56.8 +26.1	66.5	15 56.8 +26.1	66.5	28		
29	13 23.4 +19.5	63.9	13 50.3 +19.7	64.2	15 19.1 +20.6	64.4	15 47.7 +21.5	64.7	16 16.1 +22.3	64.9	16 44.2 +23.3	65.2	17 12.1 +24.1	65.2	17 32.7 +25.2	65.3	17 39.7 +25.1	65.3	17 39.7 +25.1	65.3	17 39.7 +25.1	65.3	29		
30	14 08.4 +19.3	62.9	14 10.1 +20.2	63.1	14 37.1 +21.1	63.4	15 03.9 +22.0	63.6	15 30.5 +22.9	63.8	15 56.8 +23.8	64.1	16 22.9 +24.7	64.3	16 48.8 +25.6	64.6	16 48.8 +25.6	64.6	16 48.8 +25.6	64.6	16 48.8 +25.6	64.6	30		
31	14 02.2 +19.0	61.9	14 30.3 +20.0	62.2	14 58.2 +20.9	62.4	15 25.9 +21.8	62.6	15 53.4 +22.7	62.9	16 20.6 +23.6	63.1	16 47.6 +24.5	63.4	17 14.4 +25.3	63.7	17 14.4 +25.3	63.7	17 14.4 +25.3	63.7	17 14.4 +25.3	63.7	31		
32	14 21.2 +18.9	60.9	14 50.3 +19.7	61.2	15 19.1 +20																				

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 87°, 273°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	2 45.7 -23.5	91.2	2 44.4 -24.4	91.2	2 43.1 -25.4	91.3	2 41.8 -26.4	91.3	2 40.4 -27.3	91.4	2 38.9 -28.2	91.4	2 37.4 -29.1	91.5	2 35.9 -30.1	91.5	2 35.9 -30.1	91.5	2 35.9 -30.1	91.5	2 35.9 -30.1	91.5	2 35.9 -30.1	91.5	0
1	2 22.2 -23.5	92.1	2 20.0 -24.5	92.1	2 17.7 -25.4	92.2	2 15.4 -26.4	92.2	2 13.1 -27.3	92.3	2 10.7 -28.2	92.3	2 08.3 -29.2	92.3	2 05.8 -30.1	92.4	2 05.8 -30.1	92.4	2 05.8 -30.1	92.4	2 05.8 -30.1	92.4	2 05.8 -30.1	92.4	1
2	1 58.7 -23.6	93.0	1 55.5 -24.5	93.0	1 52.3 -25.5	93.1	1 49.0 -26.4	93.1	1 45.8 -27.4	93.1	1 42.5 -28.3	93.2	1 39.1 -29.2	93.2	1 35.7 -30.1	93.2	1 35.7 -30.1	93.2	1 35.7 -30.1	93.2	1 35.7 -30.1	93.2	1 35.7 -30.1	93.2	2
3	1 35.1 -23.6	93.9	1 31.0 -24.6	94.0	1 26.8 -25.5	94.0	1 22.6 -26.4	94.0	1 18.4 -27.3	94.0	1 14.2 -28.3	94.1	1 09.9 -29.2	94.1	1 05.6 -30.1	94.1	1 05.6 -30.1	94.1	1 05.6 -30.1	94.1	1 05.6 -30.1	94.1	1 05.6 -30.1	94.1	3
4	1 11.5 -23.6	94.9	1 06.4 -24.5	94.9	1 01.3 -25.5	94.9	0 56.2 -26.5	94.9	0 51.1 -27.4	94.9	0 45.9 -28.3	94.9	0 40.7 -29.2	95.0	0 35.5 -30.1	95.0	0 35.5 -30.1	95.0	0 35.5 -30.1	95.0	0 35.5 -30.1	95.0	0 35.5 -30.1	95.0	4
5	0 47.9 -23.6	95.8	0 41.9 -24.6	95.8	0 35.8 -25.5	95.8	0 29.7 -26.4	95.8	0 23.7 -27.4	95.8	0 17.6 -28.3	95.8	0 11.5 -29.2	95.8	0 05.4 -30.1	95.8	0 05.4 -30.1	95.8	0 05.4 -30.1	95.8	0 05.4 -30.1	95.8	0 05.4 -30.1	95.8	5
6	0 24.3 -23.6	96.7	0 17.3 -24.6	96.7	0 10.3 -25.5	96.7	0 03.3 -26.5	96.7	0 03.7 -27.4	83.3	0 10.7 +28.2	83.3	0 17.7 +29.2	83.3	0 24.7 +30.1	83.3	0 24.7 +30.1	83.3	0 24.7 +30.1	83.3	0 24.7 +30.1	83.3	0 24.7 +30.1	83.3	6
7	0 00.7 -23.6	97.6	0 07.3 +24.5	82.4	0 15.2 +25.5	82.4	0 23.2 +26.4	82.4	0 31.1 +27.4	82.4	0 39.0 +28.3	82.4	0 46.9 +29.2	82.4	0 54.8 +30.1	82.4	0 54.8 +30.1	82.4	0 54.8 +30.1	82.4	0 54.8 +30.1	82.4	0 54.8 +30.1	82.4	7
8	0 22.9 +23.7	81.5	0 31.8 +24.6	81.5	0 40.7 +25.5	81.5	0 49.6 +26.4	81.5	0 58.5 +27.3	81.5	1 07.3 +28.3	81.5	1 16.1 +29.2	81.6	1 24.9 +30.1	81.6	1 24.9 +30.1	81.6	1 24.9 +30.1	81.6	1 24.9 +30.1	81.6	1 24.9 +30.1	81.6	8
9	0 46.6 +23.6	80.5	0 56.4 +24.5	80.6	1 06.2 +25.5	80.6	1 16.0 +26.5	80.6	1 25.8 +27.4	80.6	1 35.6 +28.2	80.7	1 45.3 +29.2	80.7	1 55.0 +30.1	80.7	1 55.0 +30.1	80.7	1 55.0 +30.1	80.7	1 55.0 +30.1	80.7	1 55.0 +30.1	80.7	9
10	1 10.2 +23.5	79.6	1 20.9 +24.6	79.7	1 31.7 +25.5	79.7	1 42.5 +26.3	79.7	1 53.2 +27.3	79.7	2 03.8 +28.3	79.8	2 14.5 +29.1	79.8	2 25.1 +30.0	79.8	2 25.1 +30.0	79.8	2 25.1 +30.0	79.8	2 25.1 +30.0	79.8	2 25.1 +30.0	79.8	10
11	1 33.7 +23.6	78.7	1 45.5 +24.5	78.7	1 57.2 +25.4	78.8	2 08.8 +26.4	78.8	2 20.5 +27.3	78.8	2 32.1 +28.1	78.9	2 43.6 +29.1	78.9	2 55.1 +30.0	79.0	2 55.1 +30.0	79.0	2 55.1 +30.0	79.0	2 55.1 +30.0	79.0	2 55.1 +30.0	79.0	11
12	1 57.3 +23.5	77.8	2 10.0 +24.4	77.8	2 22.6 +25.4	77.9	2 35.2 +26.3	77.9	2 47.8 +27.2	78.0	3 00.2 +28.2	78.0	3 12.7 +29.0	78.1	3 25.1 +29.9	78.1	3 25.1 +29.9	78.1	3 25.1 +29.9	78.1	3 25.1 +29.9	78.1	3 25.1 +29.9	78.1	12
13	2 20.8 +23.5	76.9	2 34.4 +24.5	76.9	2 48.0 +25.4	77.0	3 01.5 +26.3	77.0	3 15.0 +27.2	77.1	3 28.4 +28.1	77.1	3 41.7 +29.0	77.2	3 55.0 +29.9	77.2	3 55.0 +29.9	77.2	3 55.0 +29.9	77.2	3 55.0 +29.9	77.2	3 55.0 +29.9	77.2	13
14	2 44.3 +23.5	75.9	2 58.9 +24.4	76.0	3 13.4 +25.3	76.0	3 27.8 +26.2	76.1	3 42.2 +27.1	76.2	3 56.5 +28.0	76.2	4 10.7 +29.0	76.3	4 24.9 +29.8	76.4	4 24.9 +29.8	76.4	4 24.9 +29.8	76.4	4 24.9 +29.8	76.4	4 24.9 +29.8	76.4	14
15	3 07.8 +23.4	75.0	3 23.3 +24.3	75.1	3 38.7 +25.2	75.1	3 54.0 +26.2	75.2	4 09.3 +27.1	75.3	4 24.5 +28.0	75.3	4 39.7 +28.8	75.4	4 54.7 +29.8	75.5	4 54.7 +29.8	75.5	4 54.7 +29.8	75.5	4 54.7 +29.8	75.5	4 54.7 +29.8	75.5	15
16	3 31.2 +23.3	74.1	3 47.6 +24.3	74.2	4 03.9 +25.2	74.2	4 20.2 +26.1	74.3	4 36.4 +27.0	74.4	4 52.5 +27.9	74.5	5 08.5 +28.8	74.5	5 24.5 +29.7	74.6	5 24.5 +29.7	74.6	5 24.5 +29.7	74.6	5 24.5 +29.7	74.6	5 24.5 +29.7	74.6	16
17	3 54.5 +23.3	73.2	4 11.9 +24.2	73.2	4 29.1 +25.1	73.3	4 46.3 +26.0	73.4	5 03.4 +26.9	73.5	5 20.4 +27.8	73.6	5 37.3 +28.8	73.7	5 54.2 +29.6	73.8	5 54.2 +29.6	73.8	5 54.2 +29.6	73.8	5 54.2 +29.6	73.8	5 54.2 +29.6	73.8	17
18	4 17.8 +23.2	72.3	4 36.1 +24.1	72.3	4 54.2 +25.1	72.4	5 12.3 +26.0	72.5	5 30.3 +26.9	72.6	5 48.2 +27.8	72.7	6 06.1 +28.6	72.8	6 23.8 +29.5	72.9	6 23.8 +29.5	72.9	6 23.8 +29.5	72.9	6 23.8 +29.5	72.9	6 23.8 +29.5	72.9	18
19	4 41.0 +23.2	71.3	5 00.2 +24.1	71.4	5 19.3 +25.0	71.5	5 38.3 +25.9	71.6	5 57.2 +26.7	71.7	6 16.0 +27.6	71.8	6 34.7 +28.5	71.9	6 53.3 +29.4	72.0	6 53.3 +29.4	72.0	6 53.3 +29.4	72.0	6 53.3 +29.4	72.0	6 53.3 +29.4	72.0	19
20	5 04.2 +23.1	70.4	5 24.3 +23.9	70.5	5 44.3 +24.8	70.6	6 04.2 +25.7	70.7	6 23.9 +26.7	70.8	6 43.6 +27.6	70.9	7 03.2 +28.5	71.0	7 22.7 +29.3	71.1	7 22.7 +29.3	71.1	7 22.7 +29.3	71.1	7 22.7 +29.3	71.1	7 22.7 +29.3	71.1	20
21	5 27.3 +22.9	69.5	5 48.2 +23.9	69.6	6 09.1 +24.8	69.7	6 29.9 +25.7	69.8	6 50.6 +26.6	69.9	7 11.2 +27.5	70.1	7 31.7 +28.3	70.1	7 52.0 +29.2	70.2	7 52.0 +29.2	70.2	7 52.0 +29.2	70.2	7 52.0 +29.2	70.2	7 52.0 +29.2	70.2	21
22	5 50.2 +22.9	68.6	6 12.1 +23.8	68.6	6 33.9 +24.7	68.8	6 55.6 +25.6	68.9	7 17.2 +26.5	69.0	7 38.7 +27.3	69.1	8 00.0 +28.2	69.2	8 21.2 +29.1	69.4	8 41.2 +29.1	69.6	8 41.2 +29.1	69.6	8 41.2 +29.1	69.6	8 41.2 +29.1	69.6	22
23	6 13.1 +22.8	67.6	6 35.9 +23.7	67.7	6 58.6 +24.6	67.8	7 21.2 +25.5	68.0	7 43.7 +26.3	68.1	8 06.0 +27.2	68.2	8 28.2 +28.1	68.3	8 50.3 +28.0	68.4	9 19.2 +28.9	68.6	9 19.2 +28.9	68.6	9 19.2 +28.9	68.6	9 19.2 +28.9	68.6	23
24	6 35.9 +22.7	66.7	6 59.6 +23.6	66.8	7 23.2 +24.5	66.9	7 46.7 +25.3	67.0	8 10.0 +26.2	67.2	8 33.2 +26.7	67.3	8 56.3 +28.0	67.4	9 19.2 +28.9	67.6	9 19.2 +28.9	67.6	9 19.2 +28.9	67.6	9 19.2 +28.9	67.6	9 19.2 +28.9	67.6	24
25	6 58.6 +22.6	65.8	7 23.2 +23.5	65.9	7 47.7 +24.3	66.0	8 12.0 +25.2	66.1	8 36.2 +26.1	66.3	9 00.3 +27.0	66.4	9 24.3 +27.8	66.5	9 48.1 +28.7	66.7	10 0.0 +27.9	66.8	10 0.0 +27.9	66.8	10 0.0 +27.9	66.8	10 0.0 +27.9	66.8	25
26	7 21.2 +22.5	64.8	7 46.7 +23.3	64.9	8 12.0 +24.2	65.1	8 37.2 +25.1	65.2	9 06.2 +26.0	65.3	9 27.3 +26.8	65.5	9 52.1 +27.7	65.6	10 16.8 +28.5	65.8	10 35.6 +28.5	65.8	10 35.6 +28.5	65.8	10 35.6 +28.5	65.8	10 35.6 +28.5	65.8	26
27	7 43.7 +22.3	63.9	8 10.0 +23.2	64.0	8 36.2 +24.1	64.1	9 02.3 +25.0	64.3	9 28.3 +25.8	64.4	9 54.1 +26.7	64.6	10 19.8 +27.5	64.7	10 45.3 +28.4	64.9	11 10.0 +27.9	65.0	11 10.0 +27.9	65.0	11 10.0 +27.9	65.0	11 10.0 +27.9	65.0	27
28	8 06.0 +22.2	63.0	8 33.2 +23.1	63.1	8 22.6 +24.0	63.2	9 00.3 +24.0	63.3	9 27.3 +24.8	63.4	10 0.0 +25.6	63.5	10 20.8 +26.5	63.7	10 47.3 +26.4	63.8	11 14.7 +27.2	63.9	11 14.7 +27.2	63.9	11 14.7 +27.2	63.9	11 14.7 +27.2	63.9	28
29	8 28.2 +22.1	62.0	8 56.3 +22.9	62.1	9 24.3 +23.8	62.3	9 52.1 +24.7	62.4	10 19.8 +25.5	62.6	10 57.4 +26.5	62.8	12 29.0 +26.2	62.9	11 41.9 +28.1	63.1	12 28.5 +28.1	63.1	12 28.5 +28.1	63.1	12 28.5 +28.1	63.1	12 28.5 +28.1	63.1	29
30	8 50.3 +21.9	61.1	9 19.2 +22.8	61.2	9 48.1 +23.6	61.4	10 16.8 +24.5	61.5	10 45.3 +25.4	61.7	11 13.7 +26.2	61.8	11 41.9 +27.1	62.0	12 10.0 +27.9										

88°, 272° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

	23°			24°			25°			26°			27°			28°			29°			30°			Dec.		
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.		
0	1 50.5 +23.4	90.8	1 49.6 +24.4	90.8	1 48.8 +25.3	90.8	1 47.9 +26.3	90.9	1 46.9 +27.3	90.9	1 45.9 +28.2	90.9	1 44.9 +29.1	91.0	1 43.9 +30.0	91.0	1 42.9 +30.9	91.0	1 41.9 +31.8	91.0	1 40.9 +32.7	91.0	1 39.9 +33.6	91.0	0		
1	2 13.9 +23.4	89.9	2 14.0 +24.4	89.9	2 14.1 +25.3	89.9	2 14.2 +26.2	90.0	2 14.2 +27.2	90.0	2 14.1 +28.2	90.1	2 14.0 +29.1	90.1	2 13.9 +29.9	90.1	2 13.8 +30.8	90.1	2 13.7 +31.7	90.1	2 13.6 +32.6	90.1	2 13.5 +33.5	90.1	1		
2	2 37.3 +23.4	88.9	2 38.4 +24.3	89.0	2 39.4 +25.3	89.0	2 40.4 +26.2	89.1	2 41.4 +27.1	89.1	2 42.3 +28.1	89.2	2 43.1 +29.0	89.2	2 43.9 +29.9	89.3	2 44.7 +30.8	89.3	2 45.5 +31.7	89.3	2 46.3 +32.6	89.3	2 47.1 +33.5	89.3	2		
3	3 00.7 +23.3	88.0	3 02.7 +24.3	88.1	3 04.7 +25.2	88.1	3 06.6 +26.2	88.2	3 08.5 +27.1	88.2	3 10.4 +28.0	88.3	3 12.1 +29.0	88.3	3 13.8 +29.9	88.4	3 15.5 +30.8	88.4	3 17.2 +31.7	88.4	3 19.0 +32.6	88.4	3 20.7 +33.5	88.4	3		
4	3 24.0 +23.3	87.1	3 27.0 +24.2	87.2	3 29.9 +25.2	87.2	3 32.8 +26.2	87.3	3 35.6 +27.1	87.3	3 38.4 +28.0	87.4	3 41.1 +28.9	87.5	3 43.7 +29.8	87.5	3 46.4 +30.7	87.5	3 49.1 +31.6	87.5	3 51.8 +32.5	87.5	3 54.5 +33.4	87.5	4		
5	3 47.3 +23.2	86.2	3 51.2 +24.2	86.2	3 55.1 +25.2	86.3	3 59.0 +26.0	86.4	4 02.7 +27.0	86.4	4 06.4 +27.9	86.5	4 10.0 +28.9	86.6	4 13.5 +29.8	86.7	4 17.0 +30.7	86.7	4 20.5 +31.6	86.7	4 24.0 +32.5	86.7	4 27.5 +33.4	86.7	5		
6	4 10.5 +23.1	85.2	4 15.4 +24.1	85.3	4 20.3 +25.0	85.4	4 25.0 +26.0	85.5	4 29.7 +27.0	85.5	4 34.3 +27.9	85.6	4 38.9 +28.8	85.7	4 43.3 +29.7	85.8	4 47.3 +30.6	85.8	4 51.3 +31.5	85.8	4 55.3 +32.4	85.8	4 59.3 +33.3	85.8	6		
7	4 33.6 +23.1	84.3	4 39.5 +24.0	84.4	4 45.3 +25.0	84.5	4 51.0 +26.0	84.6	4 56.7 +26.8	84.7	5 02.2 +27.8	84.7	5 07.7 +28.7	84.8	5 13.0 +29.7	84.9	5 19.7 +30.6	84.9	5 26.7 +31.5	84.9	5 34.7 +32.4	84.9	5 42.7 +33.3	84.9	7		
8	4 56.7 +23.0	83.4	5 03.5 +24.0	83.5	5 10.3 +24.9	83.6	5 17.0 +25.8	83.7	5 23.5 +26.8	83.8	5 30.0 +27.7	83.8	5 36.4 +28.6	83.9	5 42.7 +29.5	84.0	5 49.0 +30.4	84.0	5 56.7 +31.3	84.0	5 64.3 +32.2	84.0	5 72.7 +33.1	84.0	8		
9	5 19.7 +22.9	82.5	5 27.5 +23.9	82.6	5 35.2 +24.8	82.7	5 42.8 +25.8	82.8	5 50.3 +26.7	82.9	5 57.7 +27.7	83.0	6 05.0 +28.6	83.1	6 12.2 +29.5	83.2	6 20.9 +30.4	83.2	6 29.6 +31.3	83.2	6 38.3 +32.2	83.2	6 47.0 +33.1	83.2	9		
10	5 42.6 +22.8	81.5	5 51.4 +23.7	81.6	6 00.0 +24.8	81.7	6 08.6 +25.7	81.8	6 17.0 +26.7	82.0	6 25.4 +27.5	82.1	6 33.6 +28.5	82.2	6 41.7 +29.4	82.3	6 50.0 +30.3	82.3	6 58.3 +31.2	82.3	6 66.6 +32.1	82.3	6 74.9 +33.0	82.3	10		
11	6 05.4 +22.7	80.6	6 15.1 +23.7	80.7	6 24.8 +24.6	80.8	6 34.3 +25.5	80.9	6 43.7 +26.5	81.1	6 52.9 +27.5	81.2	7 02.1 +28.3	81.3	7 11.1 +29.3	81.4	7 20.1 +30.3	81.4	7 29.1 +31.3	81.4	7 38.1 +32.3	81.4	7 47.1 +33.3	81.4	11		
12	6 28.1 +22.6	79.7	6 38.8 +23.6	79.8	6 49.4 +24.5	79.9	6 59.8 +25.5	80.0	7 10.2 +26.4	80.1	7 20.4 +27.3	80.3	7 30.4 +28.3	80.4	7 40.4 +29.2	80.5	7 49.4 +30.2	80.5	7 58.4 +31.1	80.5	7 67.4 +32.1	80.5	7 76.4 +33.1	80.5	12		
13	6 50.7 +22.6	78.7	7 02.4 +23.5	78.9	7 13.9 +24.4	79.0	7 25.3 +25.4	79.1	7 36.6 +26.3	79.2	7 47.7 +27.2	79.4	7 58.7 +28.2	79.5	8 09.6 +29.0	79.7	8 19.6 +29.9	79.7	8 29.5 +30.8	79.7	8 39.4 +31.7	79.7	8 49.3 +32.6	79.7	13		
14	7 13.3 +22.4	77.8	7 25.9 +23.3	77.9	7 38.3 +24.3	78.1	7 50.7 +25.2	78.2	8 02.9 +26.8	78.3	8 14.9 +27.1	78.5	8 26.9 +28.0	78.6	8 36.8 +29.0	78.8	8 46.7 +29.9	78.8	8 56.5 +30.8	78.8	8 66.3 +31.7	78.8	8 76.1 +32.6	78.8	14		
15	7 35.7 +22.2	76.9	7 49.2 +23.3	77.0	8 02.6 +24.2	77.1	8 15.9 +25.1	77.3	8 29.1 +26.0	77.4	8 42.0 +27.0	77.6	8 54.9 +27.9	77.7	9 07.6 +28.8	77.9	9 17.6 +29.7	78.1	9 27.6 +30.6	78.1	9 37.6 +31.5	78.1	9 47.5 +32.4	78.1	15		
16	7 57.9 +22.2	75.9	8 12.5 +23.1	76.1	8 26.8 +24.1	76.2	8 41.0 +25.0	76.4	8 55.1 +25.9	76.5	9 09.0 +26.9	76.7	9 22.8 +27.7	76.8	9 36.4 +28.6	77.0	9 46.3 +29.5	77.0	9 56.1 +30.4	77.0	9 66.0 +31.3	77.0	9 75.8 +32.2	77.0	16		
17	8 20.1 +22.0	75.0	8 35.6 +22.9	75.1	8 50.9 +23.9	75.3	9 06.0 +24.9	75.4	9 21.0 +25.8	75.6	9 35.9 +26.7	75.8	9 50.5 +27.6	75.9	10 05.0 +28.6	76.1	10 19.1 +29.5	76.2	10 33.6 +30.4	76.2	10 43.4 +31.3	76.2	10 53.2 +32.2	76.2	17		
18	8 42.1 +21.9	74.1	8 58.5 +22.9	74.2	9 14.8 +23.7	74.4	9 30.9 +24.7	74.5	9 46.8 +25.6	74.7	10 02.6 +26.5	74.9	10 18.1 +27.5	75.0	10 33.6 +28.4	75.2	10 43.4 +29.3	75.2	10 53.2 +30.2	75.2	10 63.0 +31.1	75.2	10 72.8 +32.0	75.2	18		
19	9 04.0 +21.7	73.1	9 21.4 +22.6	73.3	9 38.5 +23.7	73.4	9 55.6 +24.5	73.6	10 12.4 +25.5	73.8	10 29.1 +26.4	73.9	10 45.6 +27.3	74.1	11 01.9 +28.3	74.3	11 19.9 +29.2	74.3	11 31.8 +30.1	74.3	11 43.7 +31.0	74.3	11 55.6 +31.9	74.3	19		
20	9 25.7 +21.6	72.2	9 44.0 +22.6	72.3	10 02.2 +23.4	72.5	10 20.1 +24.4	72.7	10 37.9 +25.3	72.8	10 55.5 +26.2	73.0	11 12.9 +27.2	73.2	11 30.2 +28.0	73.4	11 48.0 +28.8	73.4	11 56.8 +29.6	73.4	11 65.6 +30.4	73.4	11 74.4 +31.3	73.4	20		
21	9 47.3 +21.5	71.2	10 06.6 +22.3	71.4	10 25.6 +23.3	71.6	10 44.5 +24.2	71.7	11 03.2 +25.2	71.9	11 21.7 +26.1	72.1	11 40.1 +26.9	72.3	11 58.2 +27.9	72.5	11 76.1 +28.7	72.5	11 94.0 +29.6	72.5	11 11.2 +30.5	72.5	11 29.1 +31.4	72.5	21		
22	10 08.8 +21.2	70.3	10 28.9 +22.2	70.4	10 48.9 +23.1	70.6	11 08.7 +24.1	70.8	11 28.4 +24.9	71.0	11 47.8 +25.9	71.2	12 07.0 +26.8	71.4	12 26.1 +27.7	71.6	12 45.3 +28.6	71.6	12 64.5 +29.5	71.6	12 83.7 +30.4	71.6	12 10.5 +31.3	71.6	22		
23	10 30.0 +21.1	69.3	10 51.1 +22.0	69.5	11 12.0 +23.0	69.7	11 32.8 +23.8	69.9	11 53.3 +24.8	70.1	12 13.7 +25.7	70.3	12 33.8 +26.6	70.5	12 53.8 +27.5	70.7	13 13.5 +28.4	70.7	13 33.2 +29.3	70.7	13 53.1 +30.2	70.7	13 72.9 +31.1	70.7	23		
24	10 51.1 +20.9	68.4	11 13.1 +21.9	68.6	12 39.4 +21.0	68.7	13 04.9 +21.9	68.9	13 30.2 +22.9	69.5	13 55.3 +23.8	69.6	14 20.2 +24.6	69.6	14 40.4 +25.4	69.6	14 59.3 +26.4	69.6	15 09.3 +27.4	69.6	15 28.1 +28.4	69.6	15 47.1 +29.3	69.6	24		
25	11 12.0 +20.8	67.4	11 35.0 +21.6	67.6	12 37.8 +22.5	67.8	12 20.3 +23.5	68.0	12 42.7 +24.4	68.2	13 04.9 +25.3	68.4	13 26.8 +26.3	68.6	13 46.6 +27.2	68.8	13 66.4 +28.1	68.8	13 86.2 +29.0	68.8	13 10.1 +29.9	68.8	13 29.9 +30.8	68.8	13 48.6 +31.7	68.8	25
26	11 32.8 +20.5	66.5	11 56.6 +21.5	66.7	12 20.3 +22.4	66.9	12 43.8 +23.3	67.1	13 07.1 +24.2	67.3	13 30.2 +25.1	67.5	13 53.1 +26.0	67.7	14 15.7 +26.9	67.9	14 35.7 +27.8	67.9	14 55.3 +28.7	67.9	15 05.3 +29.6	67.9	15 25.1 +30.5	67.9	15 45.0 +31.4	67.9	26
27	11 53.3 +20.4	65.5	12 18.1 +21.3	65.7	12 42.7 +22.2	65.9	13 07.1 +23.1	66.1	13 31.3 +24.0	66.3	13 55.3 +24.9	66.6	14 19.1 +25.7	66.8	14 42.6 +26.7	67.0	14 62.5 +27.6	67.2	14 82.4 +28.5	67.2	14 10.1 +29.4	67.2	14 29.3 +30.3	67.2	14 49.2 +31.2	67.2	27
28	12 13.7 +20.1	64.5	12 39.4 +21.0	64.7	13 04.9 +21.9	64.9	13 30.2 +22.9	65.2	13 55.3 +23.8	65.4	14 20.2 +24.6	65.6	14 40.2 +25.6	65.8	14 59.8 +26.5	66.0	15 09.3 +27.4	66.1	15 28.1 +28.3	66.1	15 47.0 +29.2	66.1	15 65.8 +30.1	66.1	15 84.6 +31.0	66.1	28
29	12 33.8 +20.0	63.6	13 00.4 +20.9	63.8	13 26.8 +21.8	64.0	13 53.1 +22.6	64.2	14 19.1 +23.5	64.4	14 39.6 +24.5	64.6	15 08.0 +25.0	64.8	15 37.6 +26.7	65.0	16 11.8 +26.6	65.3	16 45.8 +27.4	65.3	16 64.6 +28.3</						

# LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $88^\circ$ ,  $272^\circ$

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.				
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z					
0	1 50.5 -23.5	90.8	1 49.6 -24.4	90.8	1 48.8 -25.4	90.8	1 47.9 -26.4	90.9	1 46.9 -27.2	90.9	1 45.9 -28.1	90.9	1 44.9 -29.1	91.0	1 43.9 -30.0	91.0	1 42.9 -30.9	91.0	1 41.9 -30.0	91.0	1 40.9 -29.9	91.0	1 39.9 -29.0	91.0	0				
1	1 27.0 -23.5	91.7	1 25.2 -24.5	91.7	1 23.4 -25.4	91.8	1 21.5 -26.3	91.8	1 19.7 -27.3	91.8	1 17.8 -28.3	91.8	1 15.8 -29.1	91.8	1 13.9 -30.0	91.9	1 12.0 -30.9	91.9	1 10.9 -30.0	91.9	1 9.9 -30.9	91.9	1 8.0 -30.0	91.9	1				
2	1 03.5 -23.5	92.6	1 00.7 -24.4	92.6	0 58.0 -25.5	92.7	0 55.2 -26.4	92.7	0 52.4 -27.3	92.7	0 49.5 -28.2	92.7	0 46.7 -29.1	92.7	0 43.9 -30.1	92.7	0 41.1 -30.9	92.7	0 38.3 -30.0	93.6	0 35.5 -30.9	93.6	0 32.7 -30.0	93.6	3				
3	0 40.0 -23.5	93.5	0 36.3 -24.5	93.6	0 32.5 -25.4	93.6	0 28.8 -26.4	93.6	0 25.1 -27.3	93.6	0 21.3 -28.2	93.6	0 17.6 -29.2	93.6	0 14.8 -30.1	93.6	0 12.0 -30.9	93.6	0 9.2 -30.0	93.6	0 6.4 -30.9	93.6	0 3.6 -30.0	93.6	3				
4	0 16.5 -23.6	94.5	0 11.8 -24.5	94.5	0 07.1 -25.4	94.5	0 02.4 -26.3	94.5	0 02.2 +27.3	85.5	0 06.9 +28.2	85.5	0 11.6 +29.1	85.5	0 16.3 +30.0	85.5	0 21.0 +30.9	85.5	0 26.7 +30.0	85.5	0 32.4 +30.9	85.5	0 38.1 +30.0	85.5	4				
5	0 07.1 +23.5	84.6	0 12.7 +24.5	84.6	0 18.3 +25.4	84.6	0 23.9 +26.4	84.6	0 29.5 +27.3	84.6	0 35.1 +28.3	84.6	0 40.7 +29.2	84.7	0 46.3 +30.0	84.7	0 51.9 +30.9	84.7	0 57.5 +30.0	84.7	0 63.1 +30.9	84.7	0 68.7 +30.0	84.7	5				
6	0 30.6 +23.5	83.7	0 37.2 +24.4	83.7	0 43.7 +25.4	83.7	0 50.3 +26.3	83.7	0 56.8 +27.3	83.7	0 63.4 +28.2	83.8	1 09.9 +29.1	83.8	1 16.3 +30.1	83.8	1 22.7 +30.9	83.8	1 29.1 +30.0	83.8	1 35.5 +30.9	83.8	1 41.9 +30.0	83.8	6				
7	0 54.1 +23.5	82.8	1 01.6 +24.5	82.8	1 09.1 +25.4	82.8	1 16.6 +26.4	82.8	1 24.1 +27.3	82.9	1 31.6 +28.1	82.9	1 39.0 +29.1	82.9	1 46.4 +30.0	82.9	1 54.1 +29.9	82.9	1 62.4 +30.0	82.9	1 70.4 +29.9	82.9	1 78.6 +30.0	82.9	7				
8	1 17.6 +23.5	81.9	1 26.1 +24.4	81.9	1 34.5 +25.4	81.9	1 43.0 +26.3	81.9	1 51.4 +27.2	82.0	1 59.7 +28.2	82.0	2 08.1 +29.0	82.0	2 16.4 +29.9	82.1	2 24.1 +30.0	82.1	2 31.9 +29.9	82.1	2 39.8 +30.0	82.1	2 47.6 +30.0	82.1	8				
9	1 41.1 +23.4	80.9	1 50.5 +24.4	81.0	1 59.9 +25.3	81.0	2 09.3 +26.2	81.0	2 18.6 +27.2	81.1	2 27.9 +28.1	81.1	2 37.1 +29.1	81.2	2 46.3 +30.0	81.2	2 55.1 +30.9	81.2	2 64.3 +30.0	81.2	2 73.1 +30.9	81.2	2 82.1 +30.0	81.2	9				
10	2 04.5 +23.4	80.0	2 14.9 +24.4	80.1	2 25.2 +25.4	80.1	2 35.5 +26.3	80.1	2 45.8 +27.2	80.2	2 56.0 +28.1	80.2	3 06.2 +28.9	80.3	3 16.3 +29.8	80.3	3 26.3 +29.9	80.3	3 36.2 +29.8	80.3	3 46.1 +29.7	80.3	3 56.0 +29.6	80.3	10				
11	2 27.9 +23.4	79.1	2 39.3 +24.3	79.1	2 50.6 +25.2	79.2	3 01.8 +26.2	79.2	3 13.0 +27.1	79.3	3 24.1 +28.0	79.3	3 35.1 +29.0	79.4	3 46.1 +29.9	79.5	3 57.1 +29.8	79.5	3 68.1 +29.7	79.5	3 79.5 +29.6	79.5	3 89.9 +29.5	79.5	11				
12	2 51.3 +23.4	78.2	3 03.6 +24.3	78.2	3 15.8 +25.2	78.3	3 28.0 +26.1	78.3	3 40.1 +27.0	78.4	3 52.1 +28.0	78.5	4 04.1 +28.9	78.5	4 16.0 +29.8	78.6	4 27.8 +29.7	78.6	4 38.6 +29.6	78.6	4 49.4 +29.5	78.6	4 59.3 +29.4	78.6	12				
13	3 14.7 +23.2	77.2	3 27.9 +24.2	77.3	3 41.0 +25.2	77.4	3 54.1 +26.1	77.4	4 07.1 +27.0	77.5	4 20.1 +27.9	77.6	4 33.0 +28.8	77.6	4 45.8 +29.7	77.7	5 15.5 +29.6	76.9	5 26.4 +29.5	76.9	5 37.1 +29.4	76.9	5 47.9 +29.3	76.9	13				
14	3 37.9 +23.3	76.3	3 52.1 +24.2	76.4	4 06.2 +25.1	76.5	4 20.2 +26.0	76.5	4 34.1 +27.0	76.6	4 48.0 +27.8	76.7	5 01.8 +28.7	76.8	5 11.5 +29.6	76.9	5 22.4 +29.5	76.9	5 33.3 +29.4	76.9	5 44.2 +29.3	76.9	5 55.1 +29.2	76.9	14				
15	4 01.2 +23.1	75.4	4 16.3 +24.1	75.5	4 31.3 +25.0	75.5	4 46.2 +26.0	75.6	5 01.1 +26.8	75.7	5 15.8 +27.8	75.8	5 30.5 +28.7	75.9	5 45.1 +29.5	76.0	5 59.3 +29.4	76.0	6 14.6 +29.3	76.0	6 24.4 +29.2	76.0	6 34.2 +29.1	76.0	15				
16	4 24.3 +23.1	74.5	4 40.4 +24.0	74.6	4 56.3 +25.0	74.6	5 12.2 +25.8	74.7	5 27.9 +26.8	74.8	5 43.6 +27.7	74.9	5 59.2 +28.6	75.0	6 14.6 +29.5	75.1	6 24.4 +29.4	75.1	6 34.2 +29.3	75.1	6 44.1 +29.2	75.1	6 54.0 +29.1	75.1	16				
17	4 47.4 +23.1	73.6	5 04.4 +23.9	73.6	5 21.3 +24.8	73.7	5 38.0 +25.8	73.8	5 54.7 +26.7	73.9	6 11.3 +27.6	74.0	6 27.8 +28.4	74.1	6 44.1 +29.4	74.2	6 54.1 +29.3	74.2	7 13.5 +29.2	74.2	7 23.4 +29.1	74.2	7 33.3 +29.0	74.2	17				
18	5 10.5 +22.9	72.6	5 28.3 +23.9	72.7	5 46.1 +24.8	72.8	6 03.8 +25.7	72.9	6 21.4 +26.6	73.0	6 38.9 +27.5	73.1	6 56.2 +28.4	73.2	7 13.5 +29.3	73.2	7 23.4 +29.2	73.2	7 33.3 +29.1	73.2	7 43.2 +29.0	73.2	7 53.1 +29.9	73.2	18				
19	5 33.4 +22.9	71.7	5 52.2 +23.8	71.8	6 10.9 +24.7	71.9	6 29.5 +25.6	72.0	6 48.0 +26.5	72.1	7 06.4 +27.4	72.2	7 24.6 +28.3	72.3	7 42.8 +29.1	72.3	7 52.8 +29.0	72.3	8 11.9 +29.1	72.4	8 21.0 +28.9	72.4	8 31.1 +28.8	72.4	19				
20	5 56.3 +22.7	70.8	6 16.0 +23.7	70.9	6 35.6 +24.6	71.0	6 55.1 +25.5	71.1	7 14.5 +26.4	71.2	7 33.8 +27.3	71.3	7 52.9 +28.2	71.5	8 11.9 +29.1	71.6	8 21.1 +28.9	71.6	8 31.1 +28.8	71.6	8 41.0 +28.7	71.6	8 51.0 +28.6	71.6	20				
21	6 19.0 +22.7	69.8	6 39.7 +23.5	69.9	7 00.2 +24.5	70.1	7 20.6 +25.4	70.2	7 40.9 +26.3	70.3	8 01.1 +27.1	70.4	8 21.1 +28.0	70.6	8 31.0 +28.9	70.7	8 41.0 +28.7	70.7	8 51.0 +28.6	70.7	8 61.0 +28.5	70.7	8 71.0 +28.4	70.7	21				
22	6 41.7 +22.6	68.9	7 03.2 +23.5	69.0	7 24.7 +24.3	69.1	7 46.0 +25.2	69.3	8 07.2 +26.1	69.4	8 28.2 +27.1	69.5	8 49.1 +28.0	69.7	9 09.9 +28.8	69.8	9 19.8 +28.7	69.8	9 29.7 +28.6	69.8	9 39.6 +28.5	69.8	9 49.5 +28.4	69.8	22				
23	7 04.3 +22.4	68.0	7 26.7 +23.4	68.1	7 49.0 +24.3	68.2	8 11.2 +25.2	68.3	8 33.3 +26.0	68.5	8 55.3 +26.9	68.6	9 17.1 +27.7	68.8	9 38.7 +28.6	68.9	9 48.5 +28.5	68.9	9 58.0 +28.4	68.9	9 67.5 +28.3	68.9	9 77.0 +28.2	68.9	23				
24	7 26.7 +22.3	67.0	7 50.1 +23.2	67.2	8 13.3 +24.1	67.3	8 36.4 +25.0	67.4	8 59.3 +25.9	67.6	9 22.2 +26.7	67.7	9 44.8 +27.7	67.9	10 07.4 +28.5	68.0	10 17.0 +28.4	68.1	10 26.5 +28.3	68.1	10 35.9 +28.2	68.1	10 45.4 +28.1	68.1	10 55.0 +28.0	68.1	24		
25	7 49.0 +22.2	66.1	8 13.3 +23.1	66.2	8 37.4 +24.0	66.4	9 01.4 +24.9	66.5	9 25.2 +25.8	66.7	9 48.9 +26.7	66.8	10 12.5 +27.5	67.0	10 35.9 +28.3	67.1	10 51.9 +28.2	67.1	10 68.1 +28.1	67.1	10 84.1 +28.0	67.1	10 99.8 +27.9	67.1	10 11.7 +27.8	67.1	10 21.5 +27.7	67.1	25
26	8 11.2 +22.1	65.2	8 36.4 +22.9	65.3	9 01.4 +23.8	65.4	9 26.3 +24.7	65.6	9 51.0 +25.6	65.7	10 15.6 +26.4	65.9	10 40.0 +27.3	66.1	11 04.2 +28.2	66.2	11 23.5 +28.1	66.2	11 33.5 +28.0	66.2	11 43.4 +28.1	66.2	11 53.3 +28.0	66.2	11 63.1 +28.0	66.2	26		
27	12 05.6 +20.2	54.7	12 40.1 +21.1	54.9	13 14.6 +21.8	55.1	13 48.8 +22.7	55.3	14 22.9 +23.5	55.5	14 56.8 +24.3	55.7	15 30.5 +25.2	55.9	16 04.1 +25.9	56.2	11 07.3 +27.2	56.2	11 32.4 +27.1	56.3	11 54.3 +27.0	56.3	12 24.2 +26.9	56.3	12 44.1 +26.8	56.3	13		
28	12 25.8 +20.0	53.7	13 01.2 +20.8	53.9	13 36.4 +21.7	54.1	14 11.5 +22.5	54.3	14 46.4 +23.3	54.5	15 21.1 +24.0	54.6	15 55.7 +24.9	55.0	16 30.0 +25.7	55.2	13 21.4 +26.3	55.2	13 41.2 +26.2	55.2	14 20.1 +26.1	55.2	14 40.1 +26.0	55.2	15				
29	12 45.8 +19.8	52.8	13 22.0 +20.7	53.0	13 58.1 +21.4	53.2	14 34.0 +22.2	53.4	15 09.7 +23.0	53.6	15 45.2 +23.8	53.8	16 20.6 +24.5	54.5	17 44.2 +25.0	54.8	18 21.0 +24.2	54.9	19 44.8 +24.1	54.9	20 20.6 +24.0	54.9	20 55.7 +24.5	54.9	21				
30	13 05.6 +19.6																												

89°, 271° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	0 55.2 +23.5	90.4	0 54.8 +24.4	90.4	0 54.4 +25.3	90.4	0 53.9 +26.3	90.4	0 53.5 +27.2	90.5	0 53.0 +28.1	90.5	0 52.5 +29.1	90.5	0 52.0 +30.0	90.5	0 51.5 +30.9	90.5	0 51.0 +31.8	90.5	0 50.5 +32.7	90.5	0 50.0 +33.6	90.5	0
1	1 18.7 +23.4	89.5	1 19.2 +24.4	89.5	1 19.7 +25.4	89.5	1 20.2 +26.3	89.5	1 20.7 +27.2	89.6	1 21.1 +28.2	89.6	1 21.6 +29.0	89.6	1 22.0 +29.9	89.6	1 22.4 +30.8	89.6	1 22.8 +31.7	89.6	1 23.2 +32.6	89.6	1 23.6 +33.5	89.6	1
2	1 42.1 +23.4	88.5	1 43.6 +24.3	88.6	1 45.1 +25.3	88.6	1 46.5 +26.3	88.6	1 47.9 +27.2	88.7	1 49.3 +28.1	88.7	1 50.6 +29.1	88.7	1 51.9 +30.0	88.8	1 53.1 +30.9	88.8	1 54.3 +31.8	88.8	1 55.5 +32.7	88.8	1 56.7 +33.6	88.8	2
3	2 05.5 +23.3	87.6	2 07.9 +24.4	87.7	2 10.4 +25.2	87.7	2 12.8 +26.2	87.7	2 15.1 +27.2	87.8	2 17.4 +28.1	87.8	2 19.7 +29.0	87.8	2 21.9 +29.9	87.9	2 24.1 +30.8	87.9	2 26.3 +31.7	87.9	2 28.5 +32.6	87.9	2 30.7 +33.5	87.9	3
4	2 28.8 +23.4	86.7	2 32.3 +24.2	86.7	2 35.6 +25.3	86.8	2 39.0 +26.2	86.8	2 42.3 +27.1	86.9	2 45.5 +28.0	86.9	2 48.7 +28.9	87.0	2 51.8 +29.9	87.0	2 54.9 +30.8	87.0	2 58.0 +31.7	87.0	2 61.1 +32.6	87.0	2 64.2 +33.5	87.0	4
5	5 52.2 +23.2	85.8	5 56.5 +24.3	85.8	5 00.9 +25.2	85.9	5 05.2 +26.1	85.9	5 09.4 +27.0	86.0	5 13.5 +28.0	86.0	5 17.6 +29.0	86.1	5 21.7 +29.8	86.2	5 25.8 +30.7	86.2	5 29.9 +31.6	86.2	5 34.0 +32.5	86.2	5 38.1 +33.4	86.2	5
6	3 15.4 +23.3	84.9	3 20.8 +24.2	84.9	3 26.1 +25.1	85.0	3 31.3 +26.1	85.0	3 36.4 +27.1	85.1	3 41.5 +28.0	85.2	3 46.6 +28.8	85.2	3 51.5 +29.8	85.3	3 56.4 +30.7	85.3	3 61.3 +31.6	85.3	3 66.2 +32.5	85.3	3 71.1 +33.4	85.3	6
7	3 38.7 +23.1	83.9	3 45.0 +24.1	84.0	3 51.2 +25.1	84.1	3 57.4 +26.0	84.1	4 03.5 +26.9	84.2	4 09.5 +27.9	84.3	4 15.4 +28.8	84.3	4 21.3 +29.7	84.4	4 27.2 +30.6	84.4	4 33.1 +31.5	84.4	4 39.0 +32.4	84.4	4 45.0 +33.3	84.4	7
8	4 01.8 +23.1	83.0	4 09.1 +24.1	83.1	4 16.3 +25.0	83.2	4 23.4 +26.0	83.2	4 30.4 +26.9	83.3	4 37.4 +27.8	83.4	4 44.2 +28.8	83.5	4 51.0 +29.7	83.6	4 57.8 +30.6	83.6	5 04.6 +31.5	83.6	5 11.4 +32.4	83.6	5 18.2 +33.3	83.6	8
9	4 24.9 +23.1	82.1	4 33.2 +24.0	82.2	4 41.3 +24.9	82.2	4 49.4 +25.8	82.3	5 05.2 +27.7	82.5	5 13.0 +28.7	82.6	5 20.7 +29.6	82.7	5 27.4 +30.5	82.7	5 34.1 +31.4	82.7	5 40.8 +32.3	82.7	5 47.5 +33.2	82.7	5 54.2 +34.1	82.7	9
10	4 48.0 +22.9	81.2	5 57.2 +23.9	81.2	5 06.2 +24.9	81.3	5 15.2 +25.8	81.4	5 24.1 +26.8	81.5	5 32.9 +27.7	81.6	5 41.7 +28.5	81.7	5 50.3 +29.5	81.8	5 59.0 +30.4	81.8	6 07.7 +31.3	81.8	6 16.4 +32.2	81.8	6 25.1 +33.1	81.8	10
11	5 10.9 +22.9	80.2	5 21.1 +23.8	80.3	5 31.1 +24.8	80.4	5 41.0 +25.8	80.5	5 50.9 +26.8	80.6	6 00.6 +27.6	80.7	6 10.2 +28.5	80.8	6 19.8 +29.4	80.9	6 29.0 +30.3	80.9	6 38.2 +31.2	80.9	6 47.4 +32.1	80.9	6 56.6 +33.0	80.9	11
12	5 33.8 +22.8	79.3	5 44.9 +23.8	79.4	5 55.9 +24.7	79.5	6 06.8 +25.6	79.6	6 17.5 +26.6	79.7	6 28.2 +27.5	79.8	6 38.7 +28.4	79.9	6 49.2 +29.3	80.1	6 59.6 +30.2	80.1	7 09.3 +31.1	80.1	7 18.5 +32.0	80.1	7 27.3 +32.9	80.1	12
13	5 56.6 +22.7	78.4	6 08.7 +23.6	78.5	6 20.6 +24.6	78.6	6 32.4 +25.5	78.7	6 44.1 +26.5	78.8	6 55.7 +27.4	78.9	7 07.1 +28.3	79.0	7 18.5 +29.2	79.2	7 28.3 +30.1	79.2	7 38.1 +31.0	79.2	7 47.9 +31.9	79.2	7 57.7 +32.8	79.2	13
14	6 19.3 +22.6	77.4	6 32.3 +23.6	77.6	6 45.2 +24.5	77.7	6 57.9 +25.5	77.8	7 10.6 +26.3	77.9	7 23.1 +27.2	78.0	7 35.4 +28.2	78.2	7 47.7 +29.1	78.3	7 57.3 +30.0	78.3	8 06.9 +30.9	78.3	8 16.7 +31.8	78.3	8 26.5 +32.7	78.3	14
15	6 41.9 +22.5	76.5	6 55.9 +23.4	76.6	7 09.7 +24.3	76.7	7 23.4 +25.3	76.9	7 36.9 +26.3	77.0	7 50.3 +27.2	77.1	8 03.6 +28.1	77.3	8 16.8 +29.0	77.4	8 29.8 +30.9	77.4	8 43.0 +31.8	77.4	8 56.2 +32.7	77.4	8 69.4 +33.6	77.4	15
16	7 04.4 +22.4	75.6	7 19.3 +23.3	75.7	7 34.0 +24.3	75.8	7 48.7 +25.2	76.0	8 03.2 +26.1	76.1	8 17.5 +27.1	76.2	8 31.7 +28.0	76.4	8 45.8 +28.8	76.5	8 59.0 +29.7	76.5	9 13.2 +30.6	76.5	9 27.4 +31.5	76.5	9 41.6 +32.4	76.5	16
17	7 26.8 +22.3	74.6	7 42.6 +23.2	74.8	7 58.3 +24.2	74.9	8 13.9 +25.0	75.0	8 29.3 +26.0	75.2	8 44.6 +26.9	75.3	8 59.7 +27.8	75.5	9 14.6 +28.8	75.6	9 29.5 +29.7	75.6	9 43.4 +30.6	75.6	9 57.2 +31.5	75.6	17		
18	7 49.1 +22.1	73.7	8 05.8 +23.1	73.8	8 22.5 +24.0	74.0	8 38.9 +25.0	74.1	8 55.3 +25.8	74.3	9 11.5 +26.8	74.4	9 27.5 +27.7	74.6	9 43.4 +28.6	74.7	9 57.3 +29.5	74.7	10 12.0 +30.4	74.7	10 26.8 +31.3	74.7	10 40.4 +32.2	74.7	18
19	8 11.2 +22.0	72.8	8 28.9 +23.0	72.9	8 46.5 +23.8	73.1	9 03.9 +24.8	73.2	9 21.1 +25.8	73.4	9 38.3 +26.6	73.5	9 55.2 +27.5	73.7	10 12.0 +28.4	73.9	10 26.8 +29.3	73.9	10 40.4 +30.2	73.9	10 54.0 +31.1	73.9	11 07.8 +32.0	73.9	19
20	8 33.2 +21.9	71.8	8 51.9 +22.8	72.0	9 10.3 +23.8	72.1	9 28.7 +24.6	72.3	9 46.9 +25.5	72.4	10 04.9 +26.5	72.6	10 22.7 +27.4	72.8	10 40.4 +28.3	73.0	10 58.0 +29.2	73.0	11 16.8 +30.1	73.0	11 34.6 +31.0	73.0	11 52.5 +31.9	73.0	20
21	8 55.1 +21.7	70.9	9 14.7 +22.6	71.0	9 34.1 +23.6	71.2	9 53.3 +24.6	71.4	10 12.4 +25.5	71.5	10 31.4 +26.3	71.7	10 50.1 +27.3	71.9	11 08.7 +28.1	72.1	11 27.4 +29.0	72.1	12 45.6 +30.8	72.1	13 04.4 +31.7	72.1	13 23.2 +32.6	72.1	21
22	9 16.8 +21.6	69.9	9 37.3 +22.5	70.1	9 57.7 +23.4	70.3	10 17.9 +24.3	70.4	10 37.9 +25.2	70.6	10 57.7 +26.2	70.8	11 17.4 +27.0	71.0	11 36.8 +28.0	71.2	12 53.6 +29.8	71.2	13 13.2 +30.6	71.2	13 32.6 +31.4	71.2	14 50.4 +32.2	71.2	22
23	9 38.4 +21.4	69.0	9 59.8 +22.4	69.2	10 21.1 +23.3	69.3	10 42.2 +24.2	69.5	11 03.1 +25.1	69.7	11 23.9 +26.0	69.9	11 44.4 +26.9	70.1	12 04.8 +27.8	70.3	12 24.1 +28.7	70.3	12 44.4 +29.6	70.3	12 64.1 +30.5	70.3	13 03.5 +31.4	70.3	23
24	9 59.8 +21.3	68.0	10 22.2 +22.2	68.2	10 44.4 +23.1	68.4	11 06.4 +24.0	68.6	11 28.2 +24.9	68.8	11 49.9 +25.8	69.9	12 11.3 +26.7	70.1	12 32.0 +27.5	70.3	13 52.0 +28.4	70.3	14 21.8 +29.3	70.3	14 41.6 +30.2	70.3	14 59.4 +31.1	70.3	24
25	10 21.1 +21.1	67.1	10 44.4 +22.0	67.3	11 07.5 +22.9	67.4	11 30.4 +23.8	67.6	11 53.1 +24.8	67.8	12 15.7 +25.6	68.0	12 38.0 +26.6	68.2	13 00.2 +27.4	68.4	13 28.0 +28.2	68.4	13 56.0 +29.0	68.4	14 15.2 +29.8	68.4	14 34.0 +30.6	68.4	25
26	10 42.2 +20.9	66.1	11 06.4 +21.8	66.3	11 30.4 +22.7	66.5	11 54.2 +23.7	66.7	12 17.9 +24.5	66.9	12 41.3 +25.5	67.1	13 04.6 +26.3	67.3	13 27.6 +27.2	67.5	14 15.2 +28.1	67.5	14 34.4 +29.0	67.5	14 53.4 +30.8	67.5	15 0.0 +21.6	67.5	26
27	11 03.1 +20.8	65.2	11 28.2 +21.7	65.4	11 53.1 +22.6	65.6	12 17.9 +23.4	65.8	12 42.4 +24.4	66.0	13 06.8 +25.2	66.2	13 30.9 +26.1	66.4	13 54.8 +27.0	66.6	14 15.2 +28.8	66.6	14 34.4 +29.6	66.6	14 53.6 +30.4	66.6	15 0.0 +21.4	66.6	27
28	11 23.9 +20.5	64.2	11 49.9 +21.4	64.4	12 15.7 +22.3	64.6	12 41.3 +23.3	64.8	13 06.8 +24.1	65.0	13 20.4 +25.0	65.2	13 44.5 +26.8	65.4	14 12.3 +27.7	65.6	14 36.3 +28.5	65.6	14 56.1 +30.3	65.6	15 0.0 +21.2	65.6	15 23.4 +31.1	65.6	28
29	11 44.4 +20.4	63.3	15 55.5 +20.2	58.7	14 26.7 +21.2	58.9	15 57.6 +22.1	59.1	15 28.3 +22.9	59.3	15 58.8 +23.6	59.6	16 29.1 +24.5	59.8	16 59.1 +25.4	60.1	17 13.2 +26.3	60.1	17 33.0 +27.1	60.1	17 53.1 +28.0	60.1	18 0.0 +20.9	60.1	34
30	12 04.8 +20.2	62.3	12 32.6 +21.1	62.5	13 00.2 +21.9	62.7																			

# LATITUDE CONTRARY NAME TO DECLINATION

L.H.A.  $89^\circ$ , 271°

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	0	55.2	-23.4	90.4	0	54.8	-24.4	90.4	0	54.4	-25.4	90.4	0	53.9	-26.3	90.4	0	53.5	-27.3	90.5	0	53.0	-28.2	90.5	0	52.5	-29.1	90.5	0	52.0	-30.0	90.5	0
1	0	31.8	-23.5	91.3	0	30.4	-24.4	91.3	0	29.0	-25.4	91.3	0	27.6	-26.3	91.3	0	26.2	-27.2	91.3	0	24.8	-28.2	91.4	0	23.4	-29.1	91.4	0	22.0	-30.1	91.4	1
2	0	08.3	-23.4	92.2	0	06.0	-24.4	92.2	0	03.6	-25.3	92.2	0	01.3	-26.3	92.2	0	01.0	+27.3	87.8	0	03.4	+28.2	87.8	0	05.7	+29.1	87.8	0	08.1	+30.0	87.8	2
3	0	15.1	+23.5	86.8	0	18.4	+24.5	86.9	0	21.7	+25.4	86.9	0	25.0	+26.3	86.9	0	28.3	+27.2	86.9	0	31.6	+28.1	86.9	0	34.8	+29.1	86.9	0	38.1	+30.0	86.9	3
4	0	38.6	+23.5	85.9	0	42.9	+24.4	85.9	0	47.1	+25.4	86.0	0	51.3	+26.3	86.0	0	55.5	+27.3	86.0	0	59.7	+28.2	86.0	1	03.9	+29.1	86.0	1	08.1	+30.0	86.0	4
5	1	02.1	+23.4	85.0	1	07.3	+24.4	85.0	1	12.5	+25.3	85.0	1	17.6	+26.3	85.1	1	22.8	+27.2	85.1	1	27.9	+28.1	85.1	1	33.0	+29.1	85.1	1	38.1	+29.9	85.2	5
6	1	25.5	+23.4	84.1	1	31.7	+24.3	84.1	1	37.8	+25.3	84.1	1	43.9	+26.3	84.2	1	50.0	+27.2	84.2	1	56.0	+28.2	84.2	2	02.1	+29.0	84.3	2	08.0	+30.0	84.3	6
7	1	48.9	+23.4	83.2	1	56.0	+24.4	83.2	2	03.1	+25.3	83.2	2	10.2	+26.2	83.3	2	17.2	+27.1	83.3	2	24.2	+28.0	83.3	2	31.1	+29.0	83.4	7				
8	2	12.3	+23.3	82.2	2	20.4	+24.3	82.3	2	28.4	+25.2	82.3	2	36.4	+26.2	82.4	2	44.3	+27.1	82.4	2	52.2	+28.1	82.5	3	00.1	+28.9	82.5	3	07.9	+29.8	82.6	8
9	2	35.6	+23.3	81.3	2	44.7	+24.2	81.4	2	53.6	+25.2	81.4	3	02.6	+26.1	81.5	3	11.4	+27.1	81.5	3	20.3	+28.0	81.6	3	29.0	+28.9	81.6	9				
10	2	58.9	+23.3	80.4	3	08.9	+24.2	80.5	3	18.8	+25.2	80.5	3	28.7	+26.1	80.6	3	38.5	+27.0	80.6	3	48.3	+27.9	80.7	3	57.9	+28.9	80.8	4	07.5	+29.8	80.8	10
11	3	22.2	+23.2	79.5	3	33.1	+24.2	79.5	3	44.0	+25.1	79.6	3	54.8	+26.0	79.7	4	05.5	+27.0	79.7	4	16.2	+27.9	79.8	4	26.8	+28.8	79.9	4	37.3	+29.7	80.0	11
12	3	45.4	+23.2	78.6	3	57.3	+24.1	78.6	4	09.1	+25.0	78.7	4	20.8	+26.0	78.8	4	32.5	+26.9	78.8	4	44.1	+27.8	78.9	4	55.6	+28.7	79.0	5	07.0	+29.6	79.1	12
13	4	08.6	+23.1	77.6	4	21.4	+24.0	77.7	4	34.1	+25.0	77.8	4	46.8	+25.9	77.9	5	11.9	+27.7	78.0	5	24.3	+28.6	78.1	5	36.6	+29.5	78.2	13				
14	4	31.7	+23.0	76.7	4	45.4	+24.0	76.8	4	59.1	+24.9	76.9	5	12.7	+25.8	77.0	5	26.2	+26.7	77.0	5	39.6	+27.6	77.1	6	06.1	+29.5	77.3	14				
15	4	54.7	+22.9	75.8	5	09.4	+23.8	75.9	5	24.0	+24.8	75.9	5	38.5	+25.7	76.0	5	52.9	+26.7	76.1	6	07.2	+27.6	76.2	6	21.5	+28.4	76.3	6	35.6	+29.3	76.5	15
16	5	17.6	+22.9	74.8	5	33.2	+23.8	74.9	5	48.8	+24.7	75.0	6	04.2	+25.7	75.1	6	19.6	+26.5	75.2	6	34.8	+27.5	75.3	6	49.9	+28.4	75.5	7	04.9	+29.3	75.6	16
17	5	40.5	+22.7	73.9	5	57.0	+23.7	74.0	6	13.5	+24.6	74.1	6	29.9	+25.5	74.2	6	46.1	+26.5	74.3	7	02.3	+27.3	74.5	7	18.3	+28.2	74.6	7	34.2	+29.1	74.7	17
18	6	03.2	+22.7	73.0	6	20.7	+23.6	73.1	6	38.1	+24.6	73.2	6	55.4	+25.5	73.3	7	12.6	+26.3	73.4	7	29.6	+27.3	73.6	8	03.3	+29.1	73.8	8	18.8	+29.9	73.8	18
19	6	25.9	+22.6	72.1	6	44.3	+23.5	72.2	7	02.7	+24.4	72.3	7	20.9	+25.3	72.4	7	38.9	+26.3	72.5	7	56.9	+27.1	72.7	8	14.7	+28.0	72.8	8	32.4	+28.9	72.9	19
20	6	48.5	+22.4	71.1	7	07.8	+23.4	71.2	7	27.1	+24.3	71.4	7	46.2	+25.2	71.5	8	05.2	+26.1	71.6	8	24.0	+27.0	71.8	8	42.7	+27.9	71.9	9	01.3	+28.8	72.0	20
21	7	10.9	+22.4	70.2	7	31.2	+23.3	70.3	7	51.4	+24.1	70.4	8	11.4	+25.1	70.6	8	31.3	+26.0	70.7	8	51.0	+26.9	70.9	9	10.6	+27.8	71.0	9	30.1	+28.6	71.2	21
22	7	33.3	+22.2	69.3	7	54.5	+23.1	69.4	8	15.5	+24.1	69.5	8	36.5	+24.9	69.7	8	57.3	+25.8	69.8	9	17.9	+26.8	69.9	9	38.4	+27.6	70.1	9	58.7	+28.6	70.3	22
23	7	55.5	+22.1	68.3	8	17.6	+23.0	68.4	8	39.6	+23.9	68.6	9	01.4	+24.9	68.7	9	23.1	+25.7	68.9	9	44.7	+26.6	69.0	10	06.0	+27.5	69.2	10	27.3	+28.3	69.4	23
24	8	17.6	+22.0	67.4	8	40.6	+22.9	67.5	9	03.5	+23.8	67.7	9	26.3	+24.6	67.8	9	48.8	+25.6	68.0	10	11.3	+26.4	68.1	10	33.5	+27.4	68.3	10	55.6	+28.2	68.5	24
25	8	39.6	+21.8	66.4	9	03.5	+22.8	66.6	9	27.3	+23.6	66.7	9	50.9	+24.5	66.9	10	14.4	+25.4	67.0	10	37.7	+26.3	67.2	11	00.9	+27.1	67.4	11	23.8	+28.1	67.6	25
26	9	01.4	+21.7	65.5	9	26.3	+22.5	65.6	9	50.9	+23.5	65.8	10	15.4	+24.4	66.0	10	39.8	+25.3	66.1	11	04.0	+26.1	66.3	11	28.0	+27.0	66.5	11	51.9	+27.9	66.7	26
27	9	23.1	+21.6	64.5	9	48.8	+22.5	64.7	10	14.4	+23.3	64.9	10	39.8	+24.2	65.0	11	05.1	+25.0	65.2	11	30.1	+26.0	65.4	11	55.0	+26.9	65.6	12	19.8	+27.6	65.8	27
28	9	44.7	+21.3	63.6	10	11.3	+22.2	63.8	10	37.7	+23.2	63.9	11	04.0	+24.0	64.1	11	30.1	+24.9	64.3	11	56.1	+25.8	64.5	12	21.9	+26.6	64.7	12	47.4	+27.5	64.9	28
29	10	06.0	+21.3	62.7	10	33.5	+22.1	62.8	11	00.9	+22.9	63.0	11	28.0	+23.9	63.2	11	55.0	+24.8	63.3	12	19.1	+25.5	63.5	12	48.5	+26.4	63.7	13	14.9	+27.4	63.9	29
30	10	27.3	+21.0	61.7	11	23.8	+22.8	62.0	11	51.9	+23.6	62.2	12	19.8	+24.5	62.4	12	47.4	+25.4	62.6	13	14.9	+26.3	62.8	13	42.3	+27.1	63.0	30				
31	10	48.3	+20.9	60.8	11	17.6	+21.7	60.9	11	46.6	+22.6	61.1	12	15.5	+23.5	61.3	12	44.3	+24.3	61.5	13	12.8	+25.2	61.7	13	41.2	+26.0	61.9	14	09.4	+26.9	62.1	31
32	11	09.2	+20.7	59.8	11	39.3	+21.5	60.0	12	09.2	+22.5	60.2	12	39.0	+23.3	60.3	13	08.6	+24.1	60.5	13	38.0	+25.0	60.8	14	07.2	+25.9	61.0	14	36.3	+26.6	61.2	32
33	11	29.9	+20.5	58.8	12	20.0	+21.4	59.0	12	31.7	+22.2	59.2	13	02.3	+23.0	59.4	13	32.7	+24.0	59.6	14	03.0	+24.8	59.8	14	33.1	+25.6	60.0	15	02.9	+26.5	60.3	33
34	11	50.4	+20.3	57.9	12	22.2	+21.2	58.1	12	25.3	+22.9	58.5	13	25.6	+23.8	58.5	14	27.8	+24.5	58.9	14	58.7	+25.4	59.1	15	29.4	+26.2	59.3	16				
35																																	

90°, 270° L.H.A.

## LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° ....Zn=7  
L.H.A. less than 180° .....Zn=360°-Z

Dec.	23°			24°			25°			26°			27°			28°			29°			30°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	0 00.0	+23.4	90.0	0 00.0	+24.4	90.0	0 00.0	+25.4	90.0	0 00.0	+26.3	90.0	0 00.0	+27.2	90.0	0 00.0	+28.2	90.0	0 00.0	+29.1	90.0	0 00.0	+30.0	90.0	0
1	0 23.4	+23.5	89.1	0 24.4	+24.4	89.1	0 25.4	+25.3	89.1	0 26.3	+26.3	89.1	0 27.2	+27.3	89.1	0 28.2	+28.1	89.1	0 29.1	+29.1	89.1	0 30.0	+30.0	89.1	1
2	0 46.9	+23.4	88.2	0 48.8	+24.4	88.2	0 50.7	+25.3	88.2	0 52.6	+26.3	88.2	0 54.5	+27.2	88.2	0 56.3	+28.2	88.2	0 58.2	+29.0	88.3	1 00.0	+30.0	88.3	2
3	1 10.3	+23.4	87.2	1 13.2	+24.4	87.3	1 16.0	+25.4	87.3	1 18.9	+26.2	87.3	1 21.7	+27.2	87.3	1 24.5	+28.1	87.4	1 27.2	+29.1	87.4	1 30.0	+29.9	87.4	3
4	1 33.7	+23.4	86.3	1 37.6	+24.3	86.3	1 41.4	+25.3	86.4	1 45.1	+26.3	86.4	1 48.9	+27.2	86.4	1 52.6	+28.1	86.5	1 56.3	+29.0	86.5	1 59.9	+30.0	86.5	4
5	1 57.1	+23.3	85.4	2 01.9	+24.3	85.4	2 06.7	+25.2	85.5	2 11.4	+26.2	85.5	2 16.1	+27.1	85.5	2 20.7	+28.1	85.6	2 25.3	+29.0	85.6	2 29.9	+29.9	85.7	5
6	2 20.4	+23.4	84.5	2 26.2	+24.3	84.5	2 31.9	+25.2	84.6	2 37.6	+26.1	84.6	2 43.2	+27.1	84.7	2 48.8	+28.0	84.7	2 54.3	+28.9	84.7	2 59.8	+29.8	84.8	6
7	2 43.8	+23.2	83.6	2 50.5	+24.2	83.6	2 57.1	+25.2	83.7	3 03.7	+26.2	83.7	3 10.3	+27.1	83.8	3 16.8	+28.0	83.8	3 23.2	+28.9	83.9	3 29.6	+29.8	83.9	7
8	3 07.0	+23.3	82.6	3 14.7	+24.2	82.7	3 22.3	+25.1	82.7	3 29.9	+26.0	82.8	3 37.4	+27.0	82.9	3 44.8	+27.9	82.9	3 52.1	+28.9	83.0	3 59.4	+29.8	83.1	8
9	3 30.3	+23.1	81.7	3 38.9	+24.1	81.8	3 47.4	+25.1	81.8	3 55.9	+26.0	81.9	4 04.4	+26.9	82.0	4 12.7	+27.9	82.0	4 21.0	+28.8	82.1	4 29.2	+29.7	82.2	9
10	3 53.4	+23.1	80.8	4 03.0	+24.1	80.8	4 12.5	+25.0	80.9	4 21.9	+26.0	81.0	4 31.3	+26.9	81.1	4 40.6	+27.8	81.2	4 49.8	+28.7	81.2	4 58.9	+29.6	81.3	10
11	4 16.5	+23.1	79.9	4 27.1	+24.0	79.9	4 37.5	+25.0	80.0	4 47.9	+25.9	80.1	4 58.2	+26.8	80.2	5 08.4	+27.7	80.3	5 18.5	+28.6	80.4	5 28.5	+29.5	80.4	11
12	4 39.6	+23.0	78.9	4 51.1	+23.9	79.0	5 02.5	+24.8	79.1	5 13.8	+25.8	79.2	5 25.0	+26.7	79.3	5 36.1	+27.6	79.4	5 47.1	+28.6	79.5	5 58.0	+29.5	79.6	12
13	5 02.6	+22.8	78.0	5 15.0	+23.8	78.1	5 27.3	+24.8	78.2	5 39.6	+25.7	78.3	5 51.7	+26.6	78.4	6 03.7	+27.6	78.5	6 15.7	+28.4	78.6	6 27.5	+29.4	78.7	13
14	5 25.4	+22.8	77.1	5 38.8	+23.8	77.2	5 52.1	+24.7	77.3	6 05.3	+25.6	77.4	6 18.3	+26.6	77.5	6 31.3	+27.4	77.6	6 44.1	+28.4	77.7	6 56.9	+29.2	77.8	14
15	5 48.2	+22.8	76.1	6 02.6	+23.6	76.2	6 16.8	+24.6	76.4	6 30.9	+25.5	76.5	6 44.9	+26.4	76.6	6 58.7	+27.4	76.7	7 12.5	+28.3	76.8	7 26.1	+29.2	76.9	15
16	6 11.0	+22.6	75.2	6 26.2	+23.6	75.3	6 41.4	+24.5	75.4	6 56.4	+25.4	75.5	7 11.3	+23.4	75.5	7 26.1	+27.3	75.8	7 40.8	+28.1	75.9	7 55.3	+29.1	76.1	16
17	6 33.6	+22.5	74.3	6 49.8	+23.4	74.4	7 05.9	+24.3	74.5	7 21.8	+25.3	74.6	7 37.7	+26.2	74.8	7 53.4	+27.1	74.9	8 08.9	+28.1	75.0	8 24.4	+28.9	75.2	17
18	6 56.1	+22.4	73.3	7 13.2	+23.4	73.5	7 30.2	+24.3	73.6	7 47.1	+25.2	73.7	8 03.9	+26.1	73.9	8 20.5	+27.0	74.0	8 37.0	+27.9	74.1	8 53.3	+28.8	74.3	18
19	7 18.5	+22.3	72.4	7 36.6	+23.2	72.5	7 54.5	+24.2	72.7	8 12.3	+25.1	72.8	8 30.0	+26.0	72.9	8 47.5	+26.9	73.1	9 04.9	+27.8	73.2	9 22.1	+28.7	73.4	19
20	7 40.8	+22.2	71.5	7 59.8	+23.1	71.6	8 18.7	+24.0	71.7	8 37.4	+24.9	71.9	8 56.0	+25.8	72.0	9 14.4	+26.7	72.2	9 32.7	+27.6	72.3	9 50.8	+28.5	72.5	20
21	8 03.0	+22.0	70.5	8 22.9	+22.9	70.7	8 42.7	+23.8	70.8	9 02.3	+24.8	71.0	9 21.8	+25.7	71.1	9 41.1	+26.6	71.3	10 00.3	+27.5	71.4	10 19.3	+28.4	71.6	21
22	8 25.0	+21.9	69.6	8 45.8	+22.9	69.7	9 06.5	+23.8	69.9	9 27.1	+24.7	70.0	9 47.5	+25.6	70.2	10 07.7	+26.5	70.4	10 27.8	+27.4	70.5	10 47.7	+28.3	70.7	22
23	8 46.9	+21.8	68.7	9 08.7	+22.6	68.8	9 30.3	+23.6	69.0	9 51.8	+24.5	69.1	10 13.1	+25.4	69.3	10 34.2	+26.3	69.5	10 55.2	+27.2	69.6	11 16.0	+28.0	69.8	23
24	9 08.7	+21.6	67.7	9 31.3	+22.6	67.9	9 53.9	+23.4	68.0	10 16.3	+24.3	68.2	10 38.5	+25.2	68.4	11 00.5	+26.1	68.5	11 22.4	+27.0	68.7	11 44.0	+27.9	68.9	24
25	9 30.3	+21.5	66.8	9 53.9	+22.4	66.9	10 17.3	+23.3	67.1	10 40.6	+24.2	67.3	11 03.7	+25.1	67.4	11 26.6	+26.0	67.6	11 49.4	+26.8	67.8	12 11.9	+27.8	68.0	25
26	9 51.8	+21.3	65.8	10 16.3	+22.2	66.0	10 40.6	+23.1	66.2	11 04.8	+24.0	66.3	11 28.8	+24.9	66.5	11 52.6	+25.8	66.7	12 16.2	+26.7	66.9	12 39.7	+27.5	67.1	26
27	10 13.1	+21.1	64.9	10 38.5	+22.0	65.0	11 03.7	+22.9	65.2	11 28.8	+23.8	65.4	11 53.7	+24.7	65.6	12 18.4	+25.6	65.8	12 42.9	+26.5	66.0	13 07.2	+27.4	66.2	27
28	10 34.2	+21.0	63.9	11 00.5	+21.9	64.1	11 26.6	+22.8	64.3	11 52.6	+23.6	64.5	12 18.4	+24.5	64.7	12 44.0	+25.4	64.9	13 09.4	+26.2	65.1	13 34.6	+27.1	65.3	28
29	10 55.2	+20.8	63.0	11 22.4	+21.6	63.1	11 49.4	+22.5	63.3	12 16.2	+23.5	63.5	12 42.9	+24.3	63.7	13 09.4	+25.2	63.9	13 35.6	+26.1	64.1	14 01.7	+27.0	64.4	29
30	11 16.0	+20.6	62.0	11 44.0	+21.5	62.2	12 11.9	+22.4	62.4	12 39.7	+23.2	62.6	13 07.2	+24.1	62.8	13 34.6	+25.0	63.0	14 01.7	+25.9	63.2	14 28.7	+26.7	63.4	30
31	11 36.6	+20.4	61.1	12 05.5	+21.3	61.2	12 34.3	+22.2	61.4	13 02.9	+23.1	61.6	13 31.3	+23.9	61.8	13 59.6	+24.7	62.1	14 27.6	+25.6	62.3	14 55.4	+26.5	62.5	31
32	11 57.0	+20.2	60.1	12 26.8	+21.1	60.3	12 56.5	+21.9	60.5	13 26.0	+22.8	60.7	13 55.2	+23.7	60.9	14 24.3	+24.6	61.1	14 53.2	+25.4	61.3	15 21.9	+26.2	61.6	32
33	12 17.2	+20.0	59.1	12 47.9	+20.9	59.3	13 18.4	+21.8	59.5	13 48.8	+22.6	59.7	14 18.9	+23.5	59.9	14 48.9	+24.3	60.2	15 18.6	+25.2	60.4	15 48.1	+26.1	60.6	33
34	12 37.2	+19.8	58.2	13 08.8	+20.7	58.4	14 40.2	+21.5	58.6	17 43.8	+19.7	49.0	14 42.4	+22.3	59.0	15 13.2	+24.1	59.2	15 43.8	+24.9	59.5	16 14.2	+25.7	59.7	34
35	12 57.0	+19.6	57.2	13 29.5	+20.4	57.4	14 01.7	+21.3	57.6	14 33.8	+22.1	57.8	15 05.6	+23.0	58.0	15 37.3	+23.8	58.3	16 08.7	+24.7	58.5	16 39.9	+25.6	58.8	35
36	13 16.6	+19.4	56.2	14 23.9	+20.2	56.4	14 23.0	+21.1	56.6	14 55.9	+21.9	56.9	15 28.6	+22.8	57.1	16 01.1	+23.6	57.3	16 33.4	+24.4	57.6	17 05.5	+25.2	57.8	36
37	13 36.0	+19.2	55.3	14 10.1	+20.0	55.5	14 44.1	+20.8	55.7	15 17.8	+21.7	55.9	15 51.4	+22.4	56.1	16 24.7	+23.3	56.4	16 57.8	+24.2	56.6	17 30.7	+25.0	56.9	37
38	13 55.2	+18.9	54.3	14 30.1	+19.8	54.5	15 04.9	+20.5	54.7</td																

**LATITUDE \*CONTRARY NAME TO DECLINATION**      **L.H.A. 90°, 270°**

Dec. °	23°			24°			25°			26°			27°			28°			29°			Dec. °			
	Hc °	d ,	Z °																						
0	0 00.0	+23.4	90.0	0 00.0	+24.4	90.0	0 00.0	+25.4	90.0	0 00.0	+26.3	90.0	0 00.0	+27.2	90.0	0 00.0	+28.2	90.0	0 00.0	+29.1	90.0	0 00.0	+30.0	90.0	0
1	0 23.4	+23.5	89.1	0 24.4	+24.4	89.1	0 25.4	+25.3	89.1	0 26.3	+26.3	89.1	0 27.2	+27.3	89.1	0 28.2	+28.1	89.1	0 29.1	+29.1	89.1	0 30.0	+30.0	89.1	1
2	0 46.9	+23.4	88.2	0 48.8	+24.4	88.2	0 50.7	+25.3	88.2	0 52.6	+26.3	88.2	0 54.5	+27.2	88.2	0 56.3	+28.2	88.2	0 58.2	+29.0	88.3	1 00.0	+30.0	88.3	2
3	1 10.3	+23.4	87.2	1 13.2	+24.4	87.3	1 16.0	+25.4	87.3	1 18.9	+26.2	87.3	1 21.7	+27.2	87.3	1 24.5	+28.1	87.4	1 27.2	+29.1	87.4	1 30.0	+29.9	87.4	3
4	1 33.7	+23.4	86.3	1 37.6	+24.3	86.3	1 41.4	+25.3	86.4	1 45.1	+26.3	86.4	1 48.9	+27.2	86.4	1 52.6	+28.1	86.5	1 56.3	+29.0	86.5	1 59.9	+30.0	86.5	4
5	1 57.1	+23.3	85.4	2 01.9	+24.3	85.4	2 06.7	+25.2	85.5	2 11.4	+26.2	85.5	2 16.1	+27.1	85.5	2 20.7	+28.1	85.6	2 25.3	+29.0	85.6	2 29.9	+29.9	85.7	5
6	2 20.4	+23.4	84.5	2 26.2	+24.3	84.5	2 31.9	+25.2	84.6	2 37.6	+26.1	84.6	2 43.2	+27.1	84.6	2 48.8	+28.0	84.7	2 54.3	+28.9	84.7	2 59.8	+29.8	84.8	6
7	2 43.8	+23.2	83.6	2 50.5	+24.2	83.6	2 57.1	+25.2	83.7	3 03.7	+26.2	83.7	3 10.3	+27.1	83.8	3 16.8	+28.0	83.8	3 23.2	+28.9	83.9	3 29.6	+29.8	83.9	7
8	3 07.0	+23.3	82.6	3 14.7	+24.2	82.7	3 22.3	+25.1	82.7	3 29.9	+26.0	82.8	3 37.4	+27.0	82.9	3 44.8	+27.9	82.9	3 52.1	+28.9	83.0	3 59.4	+29.8	83.1	8
9	3 30.3	+23.1	81.7	3 38.9	+24.1	81.8	3 47.4	+25.1	81.8	3 55.9	+26.0	81.9	4 04.4	+26.9	82.0	4 12.7	+27.9	82.0	4 21.0	+28.8	82.1	4 29.2	+29.7	82.2	9
10	3 53.4	+23.1	80.8	4 03.0	+24.1	80.8	4 12.5	+25.0	80.9	4 21.9	+26.0	81.0	4 31.3	+26.9	81.1	4 40.6	+27.8	81.2	4 49.8	+28.7	81.2	4 58.9	+29.6	81.3	10
11	4 16.5	+23.1	79.9	4 27.1	+24.0	79.9	4 37.5	+25.0	80.0	4 47.9	+25.9	80.1	4 58.2	+26.8	80.2	5 08.4	+27.7	80.3	5 18.5	+28.6	80.4	5 28.5	+29.5	80.4	11
12	4 39.6	+23.0	78.9	4 51.1	+23.9	79.0	5 02.5	+24.8	79.1	5 13.8	+25.8	79.2	5 25.0	+26.7	79.3	5 36.1	+27.6	79.4	5 47.1	+28.6	79.5	5 58.0	+29.5	79.6	12
13	5 02.6	+22.8	78.0	5 15.0	+23.8	78.1	5 27.3	+24.8	78.2	5 39.6	+25.7	78.3	5 51.7	+26.6	78.4	6 03.7	+27.6	78.5	6 15.7	+28.4	78.6	6 27.5	+29.4	78.7	13
14	5 25.4	+22.9	77.1	5 38.8	+23.8	77.2	5 52.1	+24.7	77.3	6 05.3	+25.6	77.4	6 18.3	+26.6	77.5	6 31.3	+27.4	77.6	6 44.1	+28.4	77.7	6 56.9	+29.2	77.8	14
15	5 48.3	+22.7	76.1	6 02.6	+23.6	76.2	6 16.8	+24.6	76.4	6 30.9	+25.5	76.5	6 44.9	+26.4	76.6	6 58.7	+27.4	76.7	7 12.5	+28.3	76.8	7 26.1	+29.2	76.9	15
16	6 11.0	+22.6	75.2	6 26.2	+23.6	75.3	6 41.4	+24.5	75.4	6 56.4	+25.4	75.5	7 11.3	+26.4	75.7	7 26.1	+27.3	75.8	7 40.8	+28.1	75.9	7 55.3	+29.1	76.1	16
17	6 33.6	+22.5	74.3	6 49.8	+23.4	74.4	7 05.9	+24.3	74.5	7 21.8	+25.3	74.6	7 37.7	+26.2	74.8	7 53.4	+27.1	74.9	8 08.9	+28.1	75.0	8 24.4	+28.9	75.2	17
18	6 56.1	+22.4	73.3	7 13.2	+23.4	73.5	7 30.2	+24.3	73.6	7 47.1	+25.2	73.7	8 03.9	+26.1	73.9	8 20.5	+27.0	74.0	8 37.0	+27.9	74.1	8 53.3	+28.8	74.3	18
19	7 18.5	+22.3	72.4	7 36.6	+23.2	72.5	7 54.5	+24.2	72.7	8 12.3	+25.1	72.8	8 30.0	+26.0	72.9	8 47.5	+26.9	73.1	9 04.9	+27.8	73.2	9 22.1	+28.7	73.4	19
20	7 40.8	+22.2	71.5	7 59.8	+23.1	71.6	8 18.7	+24.0	71.7	8 37.4	+24.9	71.9	8 56.0	+25.8	72.0	9 14.4	+26.7	72.2	9 32.7	+27.6	72.3	9 50.8	+28.5	72.5	20
21	8 03.0	+22.0	70.5	8 22.9	+22.9	70.7	8 42.7	+23.8	70.8	9 02.3	+24.8	71.0	9 21.8	+25.7	71.1	9 41.1	+26.6	71.3	10 00.3	+27.5	71.4	10 19.3	+28.4	71.6	21
22	8 25.0	+21.9	69.6	8 45.8	+22.9	69.7	9 06.5	+23.8	69.9	9 27.1	+24.7	70.0	9 47.5	+25.6	70.2	10 07.7	+26.5	70.4	10 27.8	+27.4	70.5	10 47.7	+28.3	70.7	22
23	8 46.9	+21.8	68.7	9 08.7	+22.6	68.8	9 30.3	+23.6	69.0	9 51.8	+24.5	69.1	10 13.1	+25.4	69.3	10 34.2	+26.3	69.5	10 55.2	+27.2	69.6	11 16.0	+28.0	69.8	23
24	9 08.7	+21.6	67.7	9 31.3	+22.6	67.9	9 53.9	+23.4	68.0	10 16.3	+24.3	68.2	10 38.5	+25.2	68.4	11 00.5	+26.1	68.5	11 22.4	+27.0	68.7	11 44.0	+27.9	68.9	24
25	9 30.3	+21.5	66.8	9 53.9	+22.4	66.9	10 17.3	+23.3	67.1	10 40.6	+24.2	67.3	11 03.7	+25.1	67.4	11 26.6	+26.0	67.6	11 49.4	+26.8	67.8	12 11.9	+27.8	68.0	25
26	9 51.8	+21.3	65.8	10 16.3	+22.2	66.0	10 40.6	+23.1	66.2	11 04.8	+24.0	66.3	11 28.8	+24.9	66.5	11 52.6	+25.8	66.7	12 16.2	+26.7	66.9	12 39.7	+27.5	67.1	26
27	10 13.1	+21.1	64.9	10 38.5	+22.0	65.0	11 03.7	+22.9	65.2	11 28.8	+23.8	65.4	11 53.7	+24.7	65.6	12 18.4	+25.6	65.8	12 42.9	+26.5	66.0	13 07.2	+27.4	66.2	27
28	10 34.2	+21.0	63.9	11 00.5	+21.9	64.1	11 26.6	+22.8	64.3	11 52.6	+23.6	64.5	12 18.4	+24.5	64.7	12 44.0	+25.4	64.9	13 09.4	+26.2	65.1	13 34.6	+27.1	65.3	28
29	10 55.2	+20.8	63.0	11 22.4	+21.6	63.1	11 49.4	+22.5	63.3	12 16.2	+23.5	63.5	12 42.9	+24.3	63.7	13 09.4	+25.2	63.9	13 35.6	+26.1	64.1	14 01.7	+27.0	64.4	29
30	11 16.0	+20.6	62.0	11 44.0	+21.5	62.2	12 11.9	+22.4	62.4	12 39.7	+23.2	62.6	13 07.2	+24.1	62.8	13 34.6	+25.0	63.0	14 01.7	+25.9	63.2	14 28.7	+26.7	63.4	30
31	11 36.6	+20.4	61.1	12 05.5	+21.3	61.2	12 34.3	+22.2	61.4	13 02.9	+23.1	61.6	13 31.3	+23.9	61.8	13 59.6	+24.7	62.1	14 27.6	+25.6	62.3	14 55.4	+26.5	62.5	31
32	11 57.0	+20.2	60.1	12 26.8	+21.1	60.3	12 56.5	+21.9	60.5	13 26.0	+22.8	60.7	13 55.2	+23.7	60.9	14 24.3	+24.6	61.1	15 43.2	+25.4	61.3	15 21.9	+26.2	61.6	32
33	12 17.2	+20.0	59.1	12 47.9	+20.9	59.3	13 18.4	+21.8	59.5	13 48.8	+22.6	59.7	14 18.9	+23.5	59.9	14 48.9	+24.3	60.2	15 18.6	+25.2	60.4	15 48.1	+26.1	60.6	33
34	12 37.2	+19.8	58.2	13 08.8	+20.7	58.4	13 40.2	+21.5	58.6	14 11.4	+22.4	58.8	14 42.4	+23.2	59.0	15 13.2	+24.1	59.2	15 43.8	+24.9	59.5	16 14.2	+25.7	59.7	34
35	12 57.0	+19.6	57.2	13 29.5	+20.4	57.4	14 01.7	+21.3	57.6	14 33.8	+22.1	57.8	15 05.6	+23.0	58.0	15 37.3	+23.8	58.3	16 08.7	+24.7	58.5	16 39.9	+25.6	58.8	35
36	13 16.6	+19.4	56.2	13 49.9	+20.2	56.4	14 23.0	+21.1	56.6	14 55.9	+21.9	56.9	15 28.6	+22.8	57.1	16 01.1	+23.6	57.3	16 33.4	+24.4	57.6	17 05.5	+25.2	57.8	36
37	13 36.0	+19.2	55.3	14 10.1	+20.0	55.5	14 44.1	+20.8	55.7	15 17.8	+21.7	55.9	15 51.4	+22.4	56.1	16 24.7	+23.3	56.4	16 57.8	+24.2	56.6	17 30.7	+25.0	56.9	37
38	13 55.2	+18.9	54.3	14 30.1	+19.8	54.5	15 04.9	+20.5	54.7	15 39															

